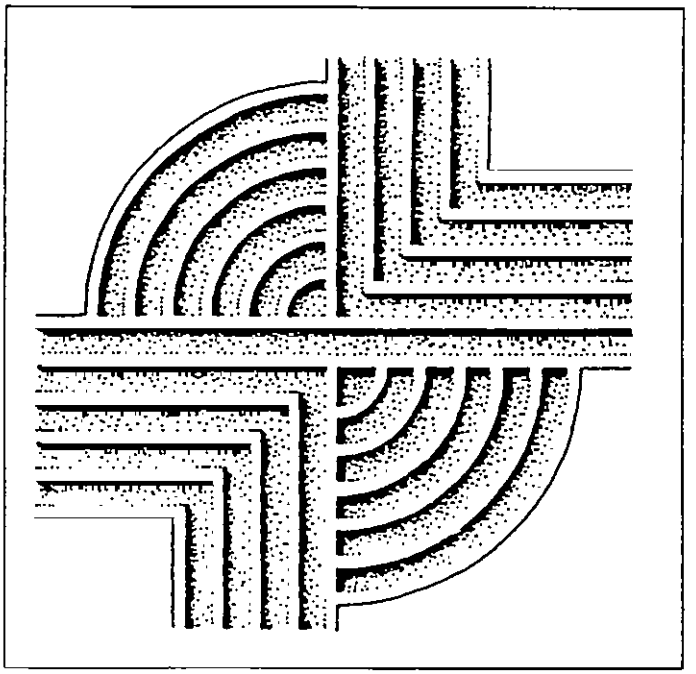
FORT BRAGG 3: AN ARCHAEOLOGICAL SURVEY OF THE 29.57 HA CAMP MACKALL SPECIAL FORCES TRAINING AREA AND 776.55 HA, RICHMOND, CUMBERLAND, AND HARNETT COUNTIES, NORTH CAROLINA



CHICORA FOUNDATION RESEARCH SERIES 193

FORT BRAGG 3:
AN ARCHAEOLOGICAL SURVEY OF THE 29.57 HA CAMP MACKALL SPECIAL FORCES TRAINING AREA AND 776.55 HA, RICHMOND, CUMBERLAND, AND HARNETT COUNTIES, NORTH CAROLINA

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ABSTRACT

This study represents an intensive archaeological survey of 11 areas under the oversight of Fort Bragg, North Carolina totaling 806.12 ha. One is designated as the Camp Mackall Special Forces training area. This tract, located in Richmond County, North Carolina, contains approximately 29.57 ha. The survey tracts within the boundaries of the Fort Bragg Military Reservation were given alphabetical designations between "A" and "J" and are situated in Cumberland County, North Carolina. Survey tract "A" contains 1.62 ha, survey tract "B" contains 11.75 ha, survey tract "C" contains 18.63 ha, survey tract "D" contains 41.72 ha, survey tract "E" contains 14.58 ha, survey tract "F" contains 10.53, and survey tract "G" contains 30.38 ha. Survey tracts "H", "I", and "J" are located in Harnett County, North Carolina. Survey tract "H" contains 314.20 ha, survey tract "I" contains 119.53 ha, and survey tract "J" contains 213.62 ha.

This work is being done in order to fulfill compliance with the National Historic Preservation Act (Public Law 89-665, as amended by Public Law 96-515), Guidelines for Federal Agency Responsibilities, under Section 110 of the National Preservation Act, Army Regulation AR 420-40, and 36CFR800 (Protection of Historic and Cultural Properties). The project is administered for the United States Army by the National Park Service (NPS), Southeast Regional Office. The scope of work specified that certain tracts within the project area be surveyed as low probability using transects and shovel tests spaced at 60 m intervals, whereas other tracts were to be surveyed as high probability using transects and shovel tests spaced at 30 m intervals .

The primary purpose of this investigation is to identify and assess the archaeological remains present at Camp Mackall and Fort Bragg for the National Register of Historic Places. There were also a number of secondary goals which included:

- an examination of changing prehistoric and historic land use;
- the effects of clear-cutting and long-term exposure on archaeological sites;
- the effectiveness of 30 m interval transects at locating significant resources;
- changing lithic material preferences; and
- site function/duration based on artifact content.

These investigations incorporated a review of the site files at the North Carolina Office of State Archaeology. Although a number of surveys have been conducted in adjoining areas only one site, in tract "C", was previously recorded. No previously recorded sites were found to exist within any of the other survey tracts.

Only one site was identified within the Camp Mackall survey tract. Within survey tract "C" one site was re-identified and one site, known to exist but not recorded, was identified. In survey tract "F" one site, an isolated occurrence, was identified. Six sites and five isolated occurrences were identified in survey tract "H", one site and five isolated occurrences were identified in survey tract "I", and one site and four isolated occurrences were identified in survey tract "J". Of the 26 archaeological sites identified, only one, a historic graveyard, is recommended eligible for inclusion on the National Register of Historic Places. The remaining 25 sites are recommended as not eligible for inclusion on the National Register of Historic Places.

Twenty-three of the 26 sites have

prehistoric components and three have historic components. Twenty-one of the 23 sites with prehistoric components exhibit only lithic debitage or other non-diagnostic material. Prehistoric pottery from one of these sites would indicate a Woodland Period occupation.

Of the three historic period sites only one was found to contain an artifact assemblage. These materials are ephemeral and consist entirely of materials consistent with late-eighteenth through early-twentieth century occupation.

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INTRODUCTION

Survey Background

Investigation of the 29.57 ha Camp Mackall Special Forces Training Area and the 776.55 ha. Fort Bragg general survey was conducted by Mr. William B. Barr of Chicora Foundation, Inc. for the National Park Service. Fort Bragg is located in south central North Carolina and encompasses portions of Cumberland, Harnett, Hoke, Moore, Richmond, and Scotland counties (Figure 1). Camp Mackall, a subinstallation of Fort Bragg, is situated in Richmond and Scotland counties, and abuts Moore and Hoke counties to the east (Figure 1).

The survey tract known as the Camp Mackall Special Forces Training Area is located entirely within Richmond County, whereas the other survey tracts on Fort Bragg are located within Cumberland and Harnett County (Figure 2).

No major highways run through Camp Mackall, although US 15/501, which travels north-south, skirts the eastern boundary. Only one major North Carolina highway, NC 24/87, which travels north-south, runs through Fort Bragg. Survey tracts "A" through "G" are located within the confines of Fort Bragg proper whereas survey tracts "H" through "J" are located north of the Little River and east of the Cape Fear River on that portion of Fort Bragg known as the Northern Training Area. Other roads within both areas consist of a system of paved cantonment roads, perimeter and firebreak roads, along with random two-rut vehicle tracts which allow access to different portions of the two bases.

The Camp Mackall Special Forces Training Area survey tract (Figure 3) is wooded with mixed hardwoods and pine. A number of low lying areas within the area drain into Drowning Creek situated at the northern end of the tract. Evidence of cultivation, in the form of furrows, is apparent within the northern portion of the survey tract. The topography rises slightly as one proceeds to the south.

The general survey of Fort Bragg contains a number of locations (Figures 4-8). Although all contain wooded areas consisting of mixed hardwood and pine, survey tracts "A" through "G" have site specific characteristics pertaining to their particular location on base.

Survey tract "A" is a wooded area which lies approximately 300 m north of the intersection of Butner and Aldish roads. This tract is bordered on the east by Aldish Road and to the west by Tank Creek (Figure 4).

Survey tract "B" is a wooded area approximately 470 m southwest of Yadkin Road and 450 m northwest of Chicken Road. This tract is bordered on the east by a newly constructed, as yet unnamed, base road (Figure 5).

Survey tract "C" is a partially wooded area which lies due south of the intersection of Reilly Street and Yadkin Road. This tract is bordered to the northeast by Yadkin Road and to the northwest by Reilly Street. The southern boundary of survey tract "C" is the Fort Bragg Military Reservation boundary. The southeastern portion of the area contains a base gasoline station and park; the southwestern area contains a power line right-of-way (Figure 6).

Survey tract "D" is a wooded area located east of Reilly Road and northeast of its intersection with Martin Street. The northeastern boundary of the survey tract contains a power line right-of-way. The southern boundary of the survey tract is a base residential neighborhood and the eastern boundary is a drainage of Big Branch Creek. Big Branch Creek, which runs northwest to southeast, also bisects the survey area (Figure 6).

Survey tract "E" is a partially wooded area located east of the north exit ramp for the All American Freeway at Gruber Road and south of Gruber Road. The eastern boundary of the survey

ACKNOWLEDGEMENTS

While the work at Camp Mackall and Fort Bragg was conducted in compliance with various national historic preservation requirements, we wish to thank all of those involved for their support and interest in the project. In particular, at Fort Bragg Mr. Wayne Boyko (Fort Archaeologist) and Ms. Bev Boyko (Collections Curator) provided guidance and good humor. We thank them for their help. Mr. Mark Jones of Integrated Training Area Management provided us with GPS assistance. Dr. Evelyn Watkins assisted us with obtaining background information on Camp Mackall.

Dr. David G. Anderson (National Park Service) administered the project for Fort Bragg. We appreciate his interest, encouragement, and confidence. Ms. Kimberly Washington (National Park Service) assisted us in navigating the paperwork for payment — a seemingly essential component of science.

We would also like to thank Ms. Almeta Rowland-White and Dr. Billy Oliver of the North Carolina Office of State Archaeology for providing direction for the background research, for clarifying curatorial issues, and for review comments.

This is a unique opportunity to explore the archaeology of a section of North Carolina which has received relatively little attention. The job, however, has been made much easier by the tremendous number of individuals who have gone before us and on whose work we have repeatedly relied. Some were instructors, some were colleagues, some were collectors, a few crossed these lines, and a very precious few were also friends.

The success of this project is largely due to the dedication and professionalism of the field crew which included Mr. Ian Hamer, Mr. John Hamer, Mr. Hollis P. Lawrence, Mr. Scott G. Sutton, and Mr. Matt Weaver. The surveys were conducted from May 13 to July 3, 1996 and we appreciate their dedication and hard work. Thanks also to Ms. Windi O'Connor and Ms. Rachel Brinson who cataloged and processed the collections for curation.

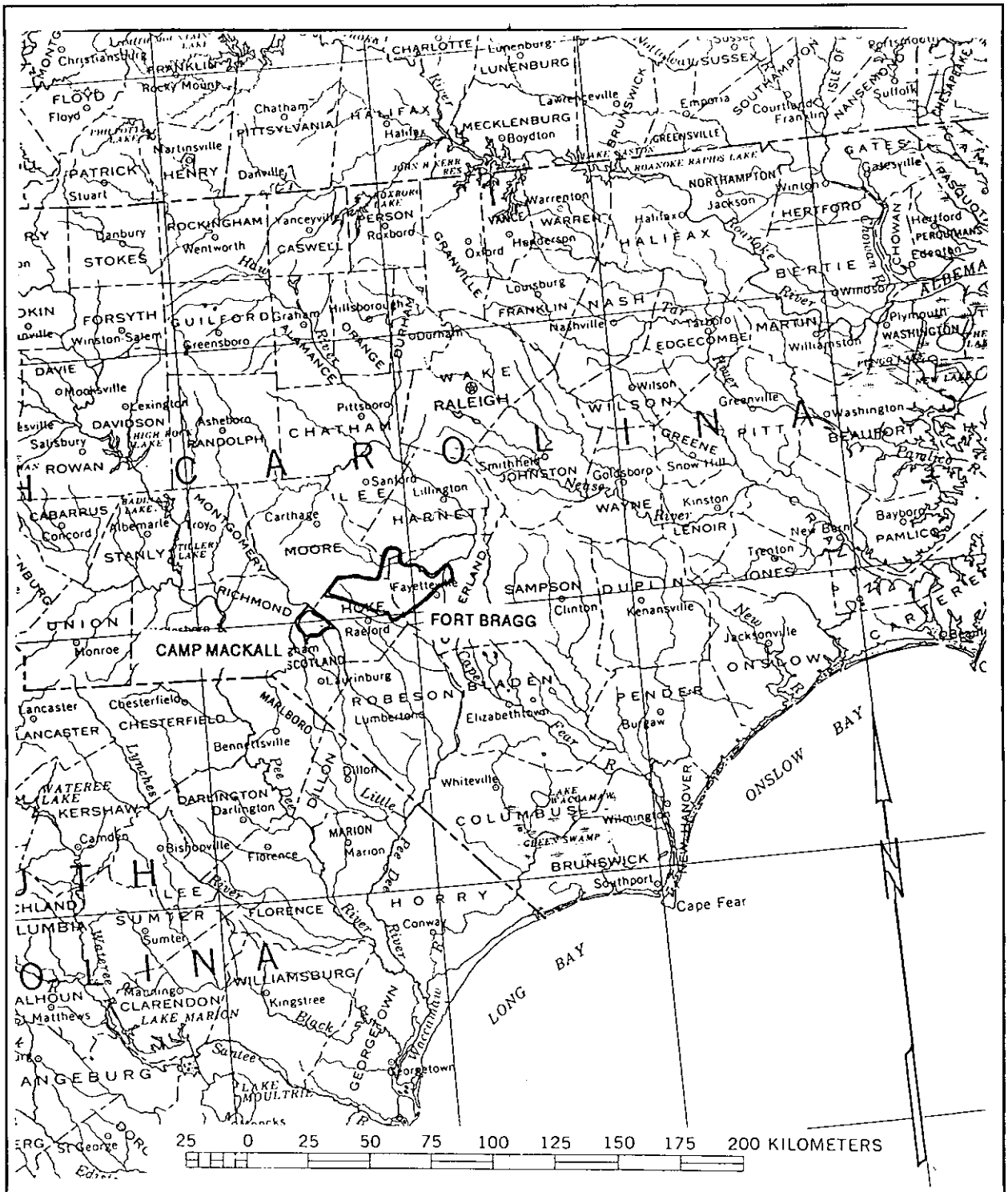

Figure 1. Location of the project areas in Richmond, Cumberland, and Harnett counties, North Carolina (USGS United States 1972 1:250,000).

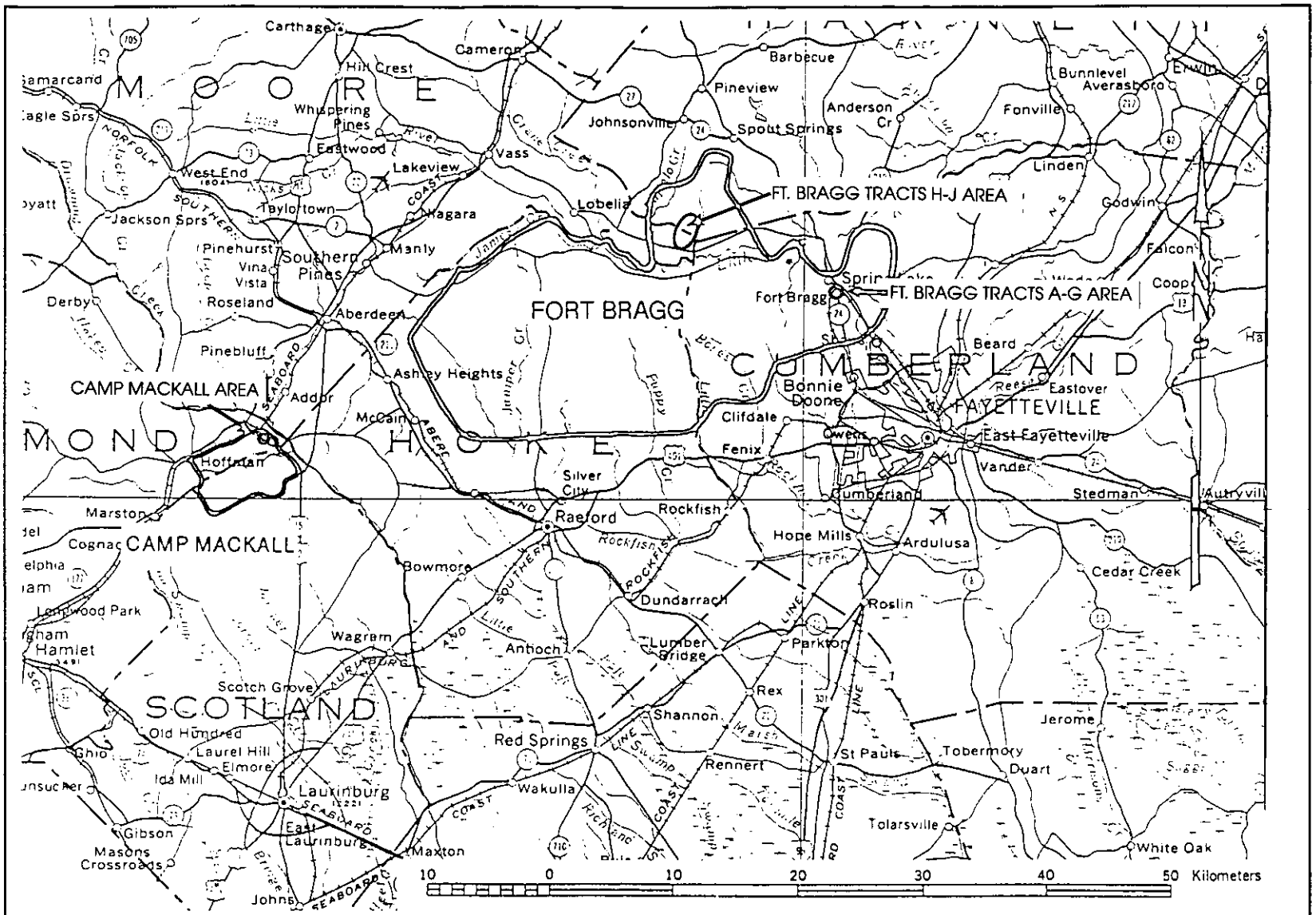

Figure 2. Location of the Camp Mackall SF Training Area and Fort Bragg general survey tracts "A" through "J" in Richmond, Cumberland, and Harnett counties, North Carolina.

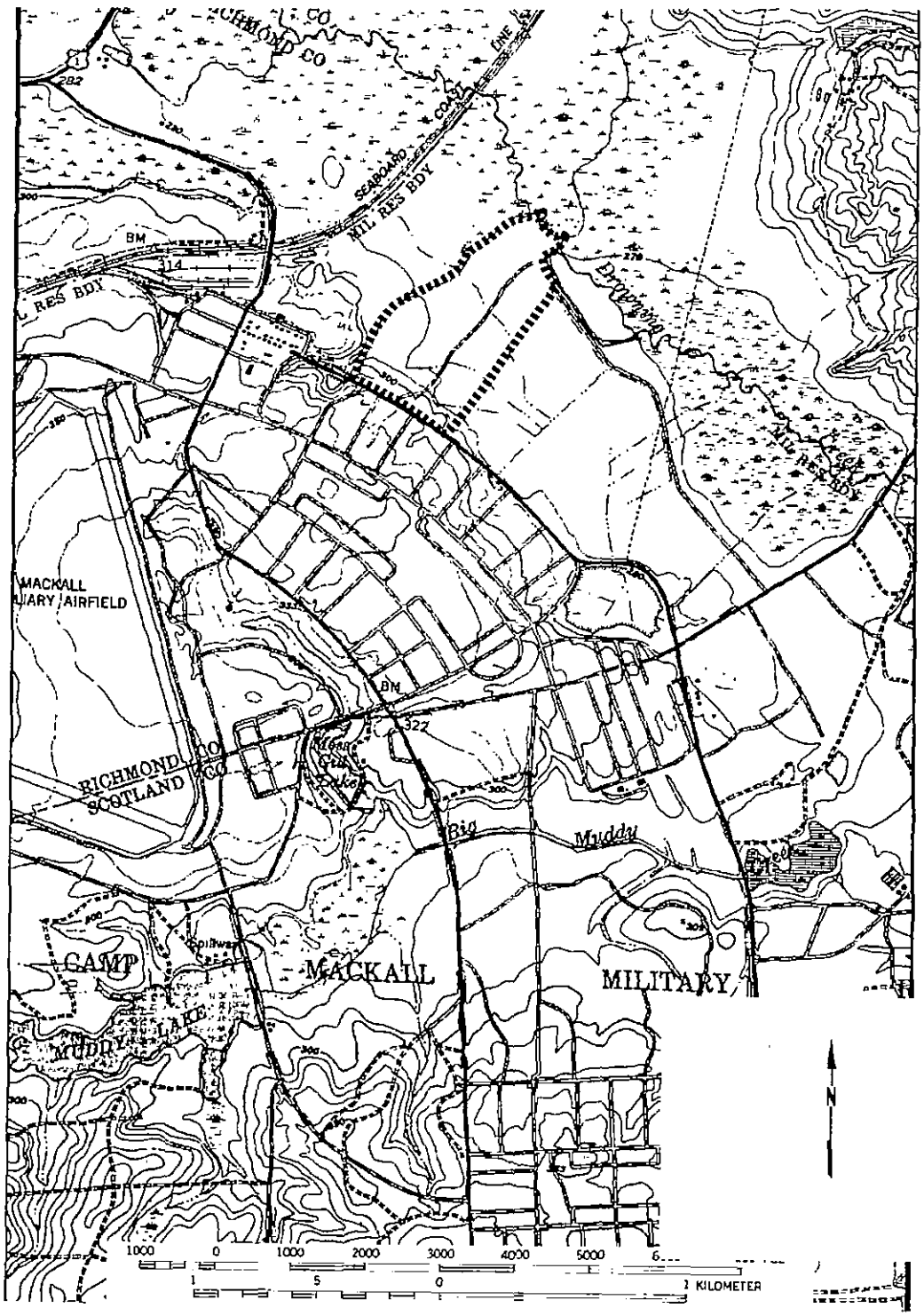

Figure 3. Camp Mackall Special Forces Training Area survey tract (Pinebluff USGS 7.5' topographic map 1:24,000).

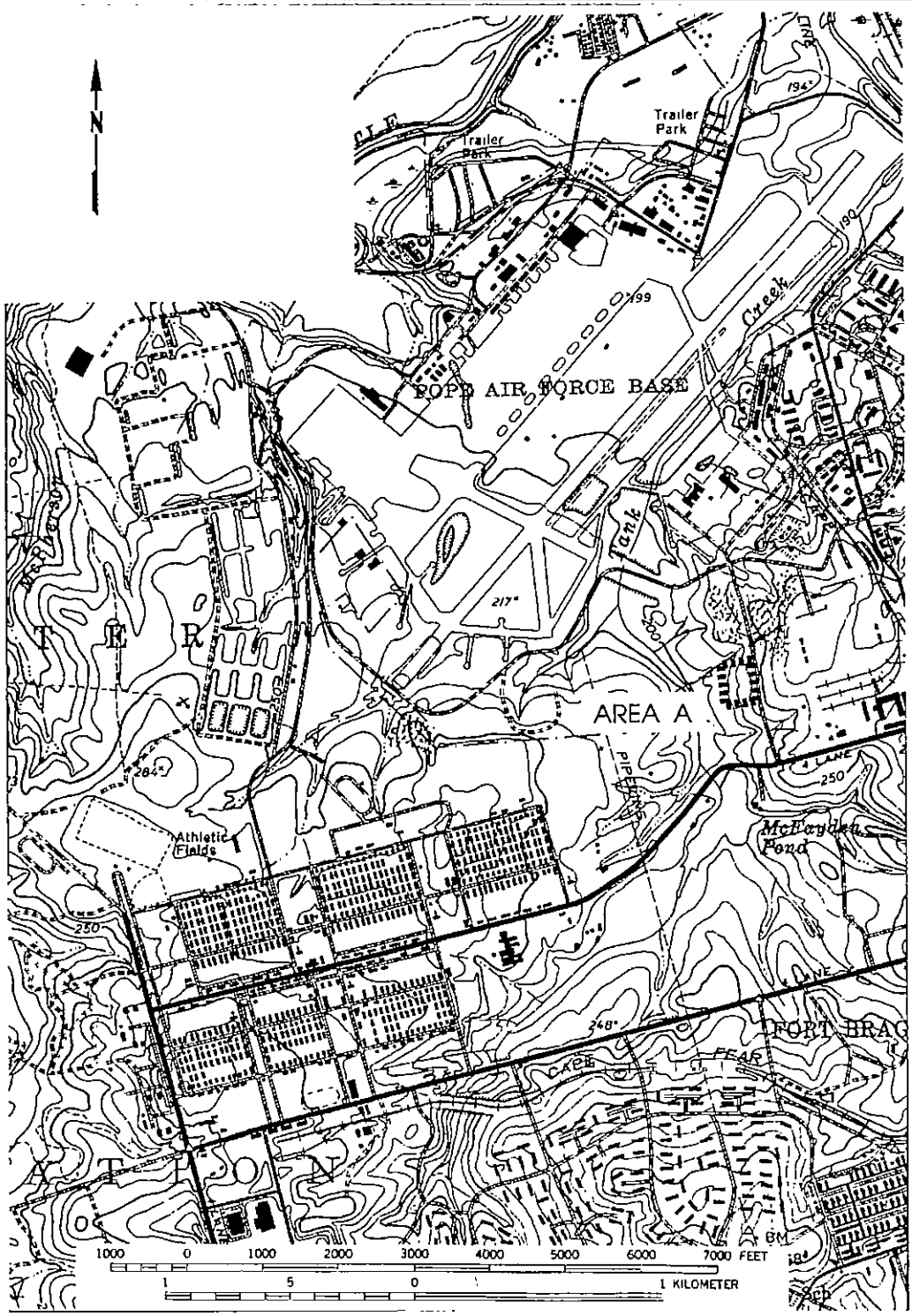

Figure 4. Fort Bragg general survey tract "A" (Overhills USGS 7.5 topographic map 1:24,000).

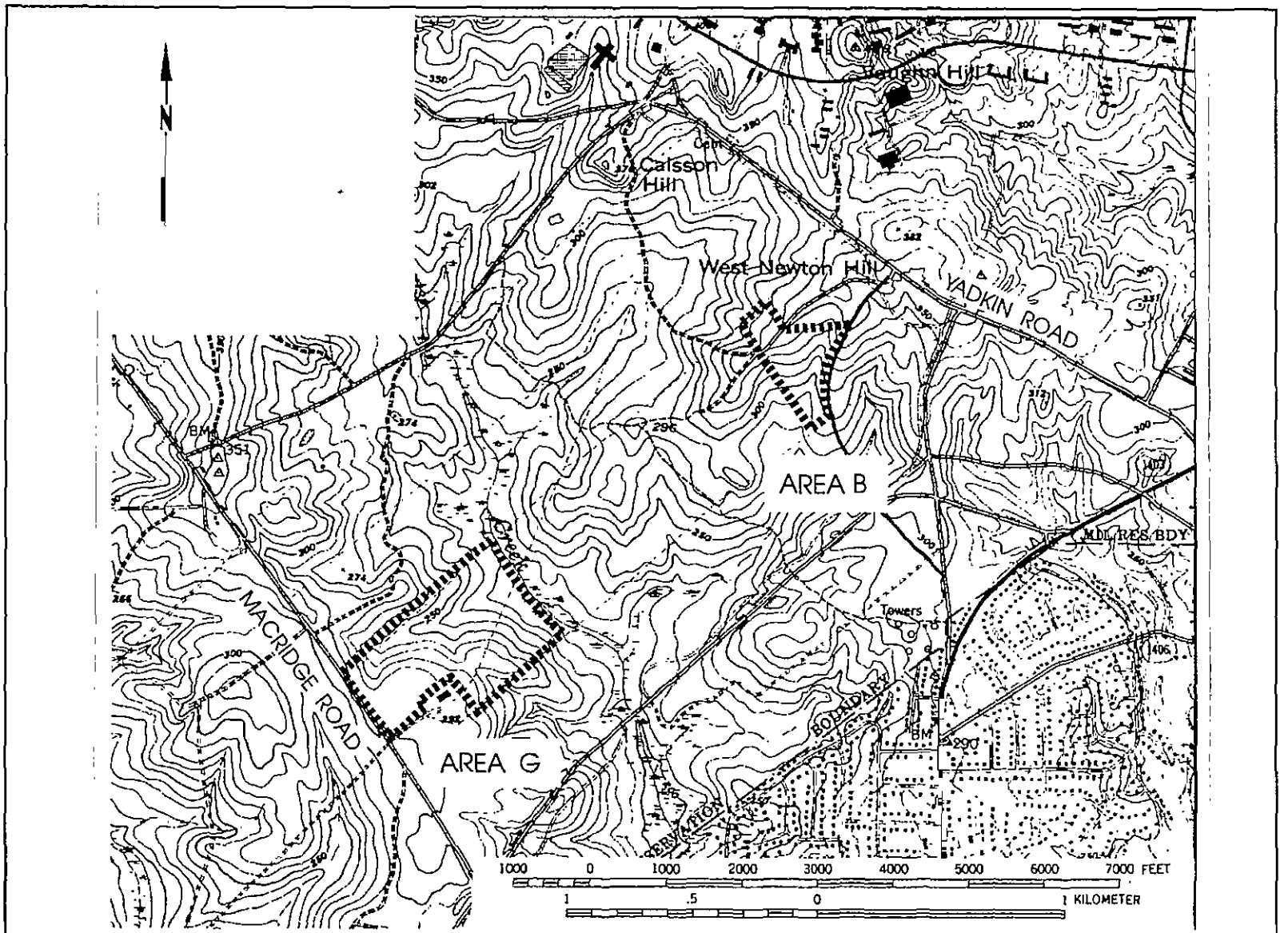

Figure 5. Fort Bragg general survey tracts "B" and "G" (Overhills USGS 7.5 topographic map 1:24,000).

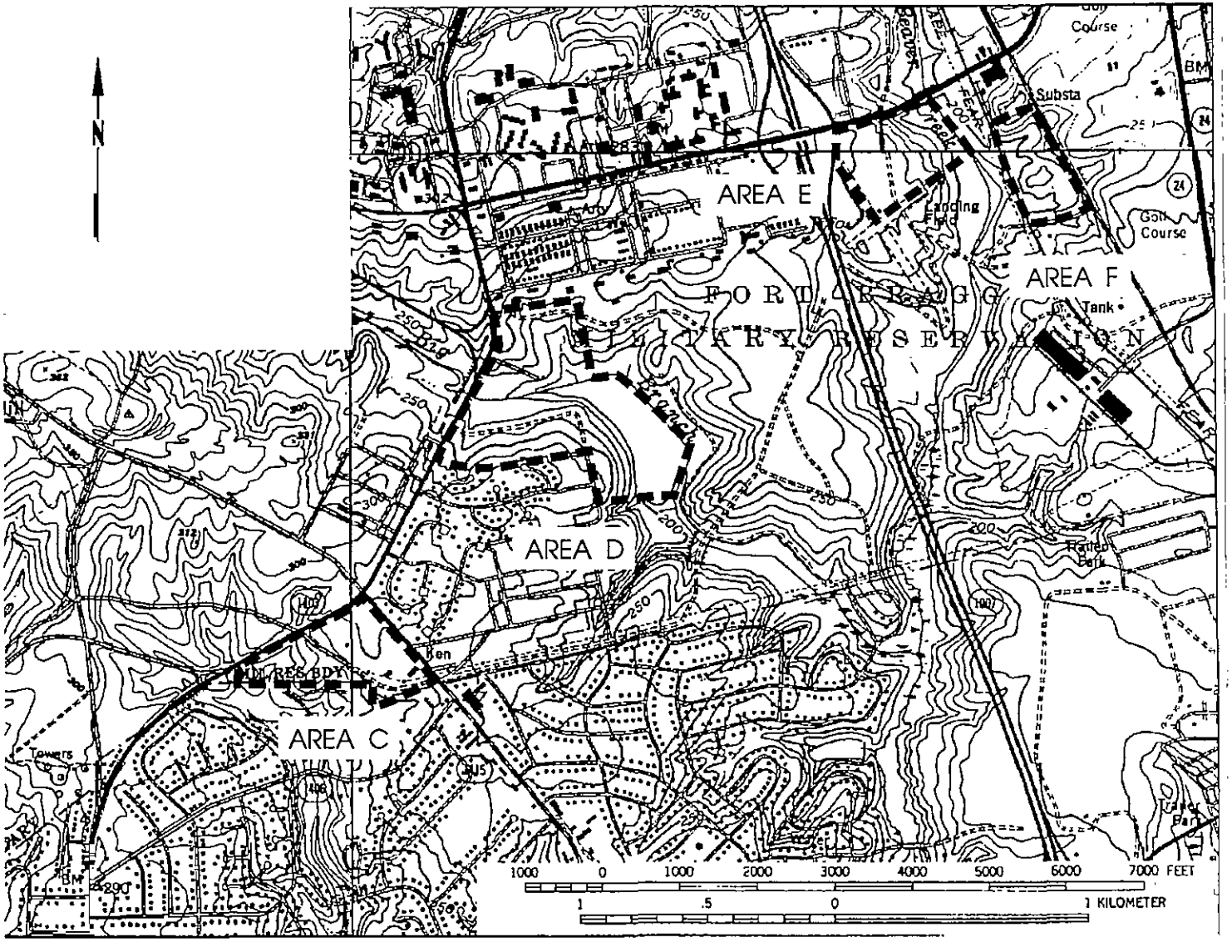

Figure 6. Fort Bragg general survey tracts "C", "D", "E", and "F" (Overhills USGS 7.5' topographic map 11:24,000).

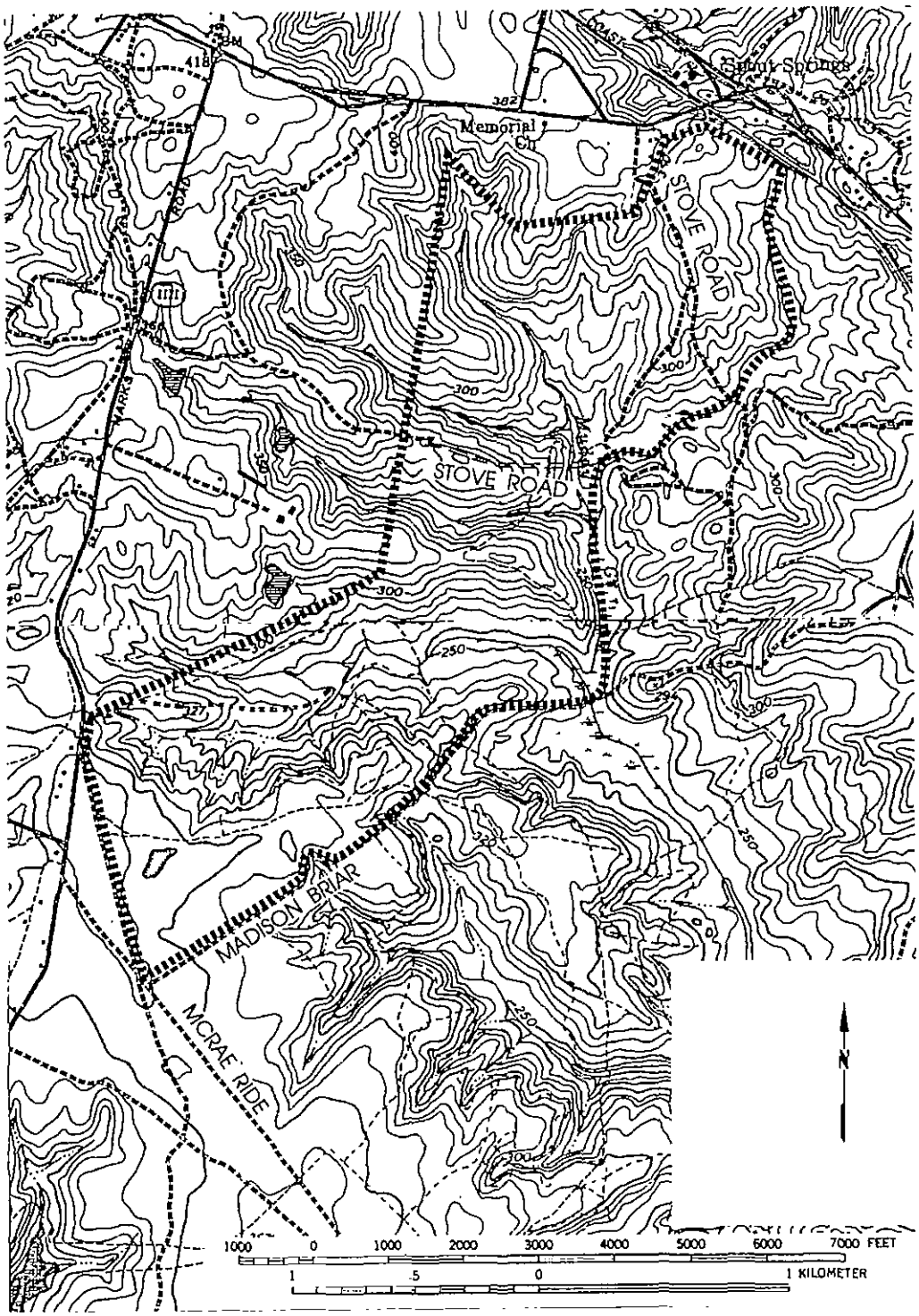

Figure 7. Fort Bragg general survey tract "H" (Overhills and Olivia USGS 7.5' topographic map 1:24,000).

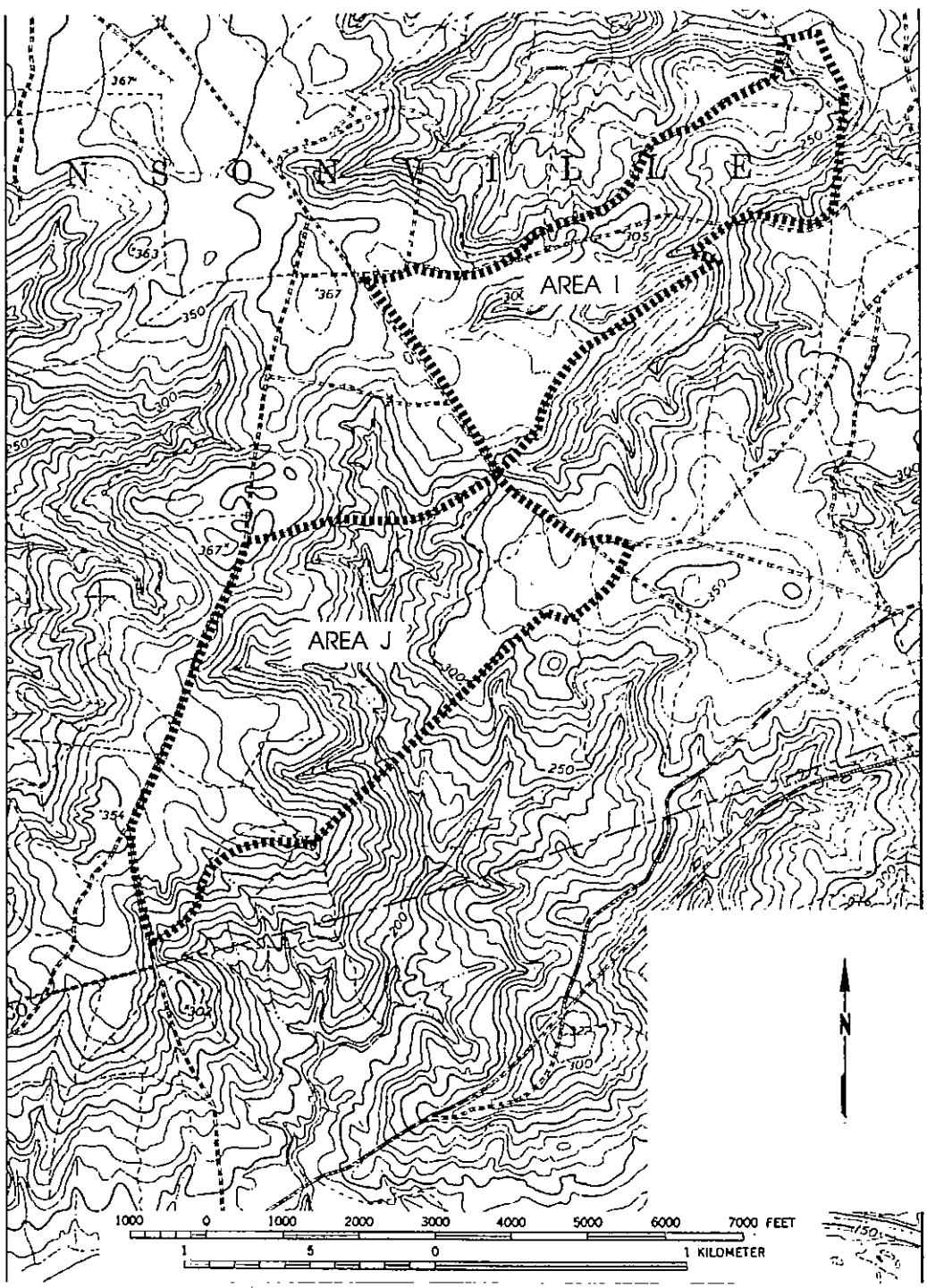

Figure 8. Fort Bragg general survey tracts "I" and "J" (Overhills 7.5' topographic map 1:24,000).

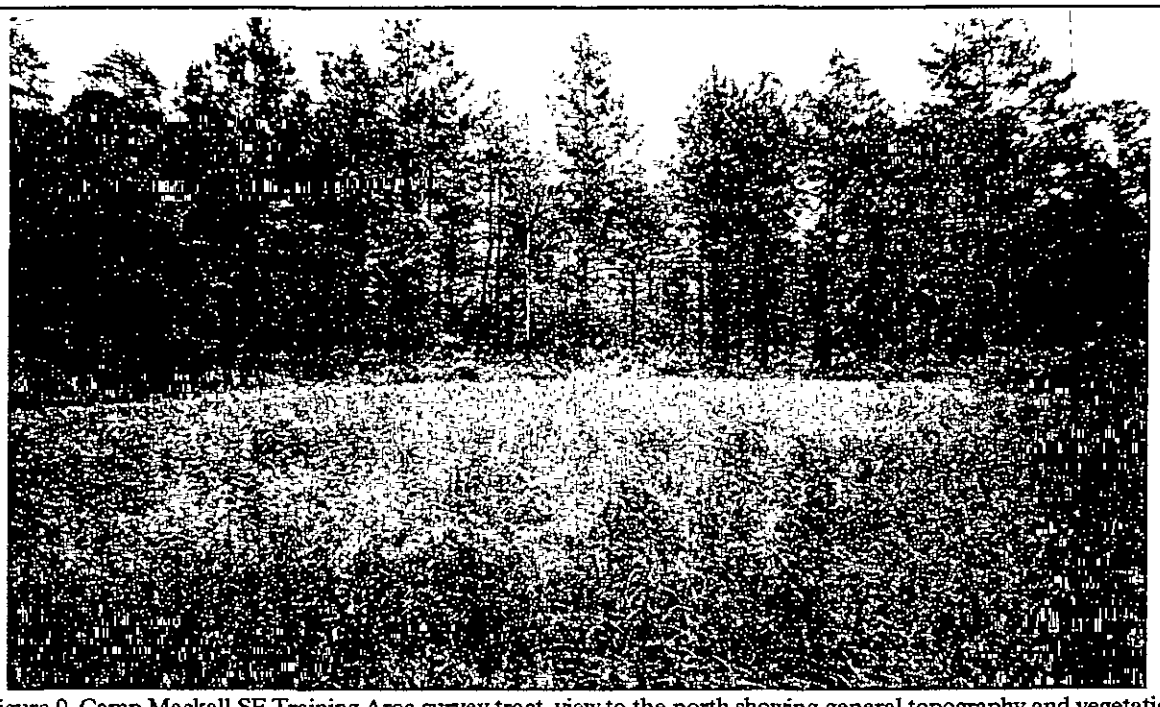

Figure 9. Camp Mackall SF Training Area survey tract, view to the north showing general topography and vegetation.

Figure 10. Fort Bragg general survey tract "A", view to the west showing general topography and vegetation.

Figure 11. Fort Bragg general survey tract "B", view to the north showing general topography and vegetation.

Figure 12. Fort Bragg general survey tract "C", view to the east showing general topography and vegetation.

Figure 13. Fort Bragg general survey tract "D", view to the north showing general topography and vegetation.

Figure 14. Fort Bragg general survey tract "E", view to the north showing general topography and vegetation.

Figure 15. Fort Bragg general survey tract "F", view to the south showing general topography and vegetation.

Figure 16. Fort Bragg general survey tract "G", view to the north showing general topography and vegetation.

Figure 17. Fort Bragg general survey tract "H", view to the north showing general topography and vegetation.

Figure 18. Fort Bragg general survey tract "T", view to the south showing general topography and vegetation.

Figure 19. Fort Bragg general survey tract "J", view to the south showing general topography and vegetation.

tract is Beaver Creek and the southern boundary is an airplane landing field (Figure 6).

Survey tract "F" is a wooded area located west of Knox Street approximately 220 m south of the intersection of Knox Street and Gruber Road. The survey tract is bounded to the north by an electrical substation, to the south by an unnamed base road, and to the west by the roadbed of the Cape Fear Railroad (Figure 6).

Survey tract "G" is a wooded area located east of MacRidge Road approximately 1.2 km south of the intersection of MacRidge Road and Yorktown Victor Road. The survey tract is bounded to the north and south by a firebreak road and to the east by Stewarts Creek (Figure 5).

Survey tracts "H" through "J" contain no residential or standing historic structures and, other than being planted in farm pine, would be considered undeveloped land. Numerous creeks and drainages are associated with these survey tracts.

Survey tract "H" is a large area covered with mixed hardwood and farm pine. The tract is bounded to the west by a firebreak road which runs roughly parallel with MacRae Ride Road, to the north and northwest by the Fort Bragg Military Reservation boundary, to the east by Muddy Creek, and to the south by Madison Briar Road. Muddy Creek runs north-south and bisects a portion of the survey tract. Numerous drainages, associated with Muddy Creek, may be found throughout the survey area (Figure 7).

Survey tract "I" is a large area covered with mixed hardwood and farm pine. The tract is bounded to the north by Scotchman Road, to the east by a drainage of Jumping Run Creek, to the south by Fort Bragg Firebreak 5, and to the west by Garland Almond Road. Numerous drainages of Jumping Run Creek extend west into the survey area (Figure 8).

Survey tract "J" is a large area covered in mixed hardwood and farm pine. The tract is bounded to the northeast by a drainage of the Little River, to the east by Garland Almond Road, to the south by Fort Bragg Firebreak 7, to the southwest by Williamson Road, and to the

northwest by MacRae Ride Road. Numerous drainages from this branch of the Lower Little River extend throughout the central portion of the survey area (Figure 8).

All survey tracts were designated as either high or low probability. Survey tracts "A" through "F" were designated as low probability areas. These tracts were examined using transects spaced at 60 m intervals. Shovel tests were placed at 60 m intervals along these transects. The Camp Mackall Special Forces Training Area, as well as survey tracts "G" through "J" were designated as high probability areas. These areas were examined using transects spaced at 30 m intervals. Shovel tests were placed at 30 m intervals along these transects. Once an archaeological site was identified, the area was shovel tested on a north-south cardinal grid pattern at 10 m to 20 m intervals, with the interval of testing determined by site size. In addition, at least one 50 cm square test unit was excavated at each recorded, non-isolated occurrence.

Measurements, in compliance with the National Park Service scope of work, were taken using metric units. In order to maintain consistency throughout this research, all measurements are provided using metric units and Table 1 provides conversions to English measures. The only exception is that of contours on site maps. These measurements, taken from United States Geological Survey maps, are in feet.

Table 1.
Metric Equivalents

	LENGTH	
kilometer	km	0.62 miles
meter	m	39.37 inches or 3.28 feet
centimeter	cm	0.39 inches
millimeter	mm	0.04 inches
	AREA	
hectare	ha	2.47 acres
square km	km^2	0.3861 square miles
	WEIGHT	
metric ton	t	1.1 English tons
	TEMPERATURE	
C to F = (°C x 1.8) + 32 = °F		

These investigations incorporated a review of the site files at the North Carolina Office of State Archaeology. This review consulted all known published reports and/or preservation plans which may exist regarding previous research at Camp Mackall and Fort Bragg. Although a number of previously recorded prehistoric archaeological sites were identified by Dr. Thomas Loftfield (1979) as a part of a general reconnaissance survey of Fort Bragg, Camp Mackall, and Simmons Army Air Field, none of these previously identified sites were found to exist within the confines of the present survey boundaries. In addition, the fort's Historic Preservation Plan (Braley 1990), and independent studies (Jameson 1986) were consulted regarding sites or structures on the National Register of Historic Places within all survey tracts. Only one was found to be recorded, by Jameson (1986); a historic gravesite in survey tract "C". Additional information concerning this previous survey, and information recovered by Loftfield (1979) and Braley (1990), can be found in the **Research Strategy and Methods** section, as well as the **Conclusions.**

Prehistoric sites were located in the Camp Mackall Special Forces Training Area survey tract, as well as Fort Bragg general survey tracts "F", "H", "I", and "J". Historic sites were located in Fort Bragg general survey tracts "C" and "J". No cultural resources were found to exist within survey tracts "A", "B", "D", "E", or "G". Only one site was identified within the Camp Mackall Special Forces Training Area survey tract (Figure 3). Two historic sites were identified within survey tract "C". One prehistoric isolated occurrence was discovered in survey tract "F". Survey tract "H" contained six prehistoric sites and five prehistoric isolated occurrences. Survey tract "I" contained one prehistoric site and five prehistoric isolated occurrences. Survey tract "J" contained one historic site and four prehistoric isolated occurrences.

Of the archaeological sites identified, only one, a historic gravesite, is recommended eligible

for inclusion on the National Register of Historic Places. The remaining sites are recommended as not eligible for inclusion on the National Register of Historic Places and no further management activities are necessary. The Base Archaeologist, however, may wish to continue monitoring these sites. The additional data may prove useful to our understanding of settlement, in particular, spatial patterning and density, as well as the process of site destruction through artificial means.

The majority of sites from the Camp Mackall Special Forces Training Area and Fort Bragg general survey tracts contained non-diagnostic debitage. Only two sites contained definable artifact concentrations. These components included Archaic and Woodland materials. The most common Woodland component was the Yadkin Phase, represented by pottery recovered from site 31HT213*. The only identifiable Archaic Period component was found at site 31HT225* in survey tract "J".

All of the historic components, identified from two sites in survey tract "C" and one from survey tract "J", are indicative of the early to mid-nineteenth through the late-twentieth century period. Only one site, 31HT231**, was found to contain an artifact assemblage.

Surveys were conducted from May 13, 1996 to July 3, 1996. The Principal Investigator was Dr. Michael Trinkley. The Field Director for the project was Mr. William B. Barr. Field crew consisted of Mr. Ian J. Hamer, Mr. John Hamer, Mr. Hollis P. Lawrence, Mr. Scott G. Sutton, and Mr. Matthew Weaver.

Curation

Archaeological site forms have been filed with the North Carolina Office of State Archaeology. The field notes, photographic materials, artifact catalogs, and artifacts resulting from these investigations have been curated at Fort Bragg using their accessioning and cataloging system. All records and duplicate copies have been provided to Fort Bragg and will be maintained by that institution in perpetuity.

NATURAL SETTING

Physiography and Drainage

Fort Bragg, which encompasses about 60,000 ha, forms a roughly rectangular shape measuring about 19 km north-south by about 44 km east-west. The fort's most distinctive feature is perhaps its diversity of relief. Elevations range from about 63 meters in the west to about 155 meters in the northeast along Gibson Creek. Scattered across the base are several "hills" about 30 meters higher than the surrounding topography. Loftfield observes that the extremes in topography "have been exaggerated by an erosive process on the sandy soils along the numerous streams" (Loftfield 1979:3).

Camp Mackall is a subinstallation of Fort Bragg situated about 64 km west of the main base. Camp Mackall is roughly square in shape and encompasses about 3,200 ha. It is bounded to the east by Drowning Creek, to the southeast by US 15/501, to the south by South Range Road and Beaver Dam Creek, to the west by Tuckers Road, and to the north by the right-of-way for the Seaboard Coastline Railroad. The camp is about evenly divided between Richmond County to the north and Scotland County to the south.

The drainage pattern of the Fort Bragg area (well illustrated by Loftfield 1979:Figure 1), consists of a number of relatively small streams and creeks flowing either north or south from an east-west ridge that runs through the center of the Fort Bragg reservation. Those to the south flow into the Cape Fear River, while those to the north flow into the Lower Little River (which itself empties into the Cape Fear). Rockfish Creek, the headwaters of which originate on Fort Bragg, serves as the major drainage for the creeks in the western portion of the base (Figure 7).

Camp Mackall is drained by Big Muddy Creek, which flows west to east through the center of the facility, flowing into Drowning Creek, which forms the Camp's eastern boundary. Long Branch Creek flows from the northwestern quadrant of the Camp southeastwardly to Big Muddy Creek. Beaver Dam Creek flows northeastwardly, also draining into Drowning Creek.

Both Camp Mackall and Fort Bragg are situated entirely within the Sandhills physiographic province — a narrow band of ancient marine sediments sandwiched between the Coastal Plain, about 18 km to the southeast, and the Piedmont, about 50 km to the northwest. Almost every previous study on the base mentions that the Sandhills seem to be a favorite location for military installations (such as Fort Jackson, South Carolina and Fort Gordon, Georgia) — the land being cheap, and the climate and topography offering the potential for year-round use.

The 29.57 ha Camp Mackall Special Forces Training Area survey tract is located in northeastern Richmond County, North Carolina. The 776.55 ha Fort Bragg general survey tracts are located within northern Cumberland County and southern Harnett County, North Carolina. All of the survey areas, like the remainder of the bases, are situated in the Sandhills region of the Upper Coastal Plain physiographic region and are located in the south central portion of North Carolina. Richmond County is bounded to the north by Montgomery County, to the northeast by Moore County, to the southeast by Scotland County, to the south by Marlboro County, South Carolina, and to the west by Anson County. Cumberland County is bounded to the north by Harnett County, to the east by Sampson County, to the south by Bladen County, to the southwest by Robeson County, and to the west by Moore and Hoke Counties. Harnett County is bounded to the north by Wake County, to the northeast by Johnston County, to the southwest by Sampson County, to the south by Cumberland County, to the southwest by Moore County, to the east by Lee County, and to the northwest by Chatham County.

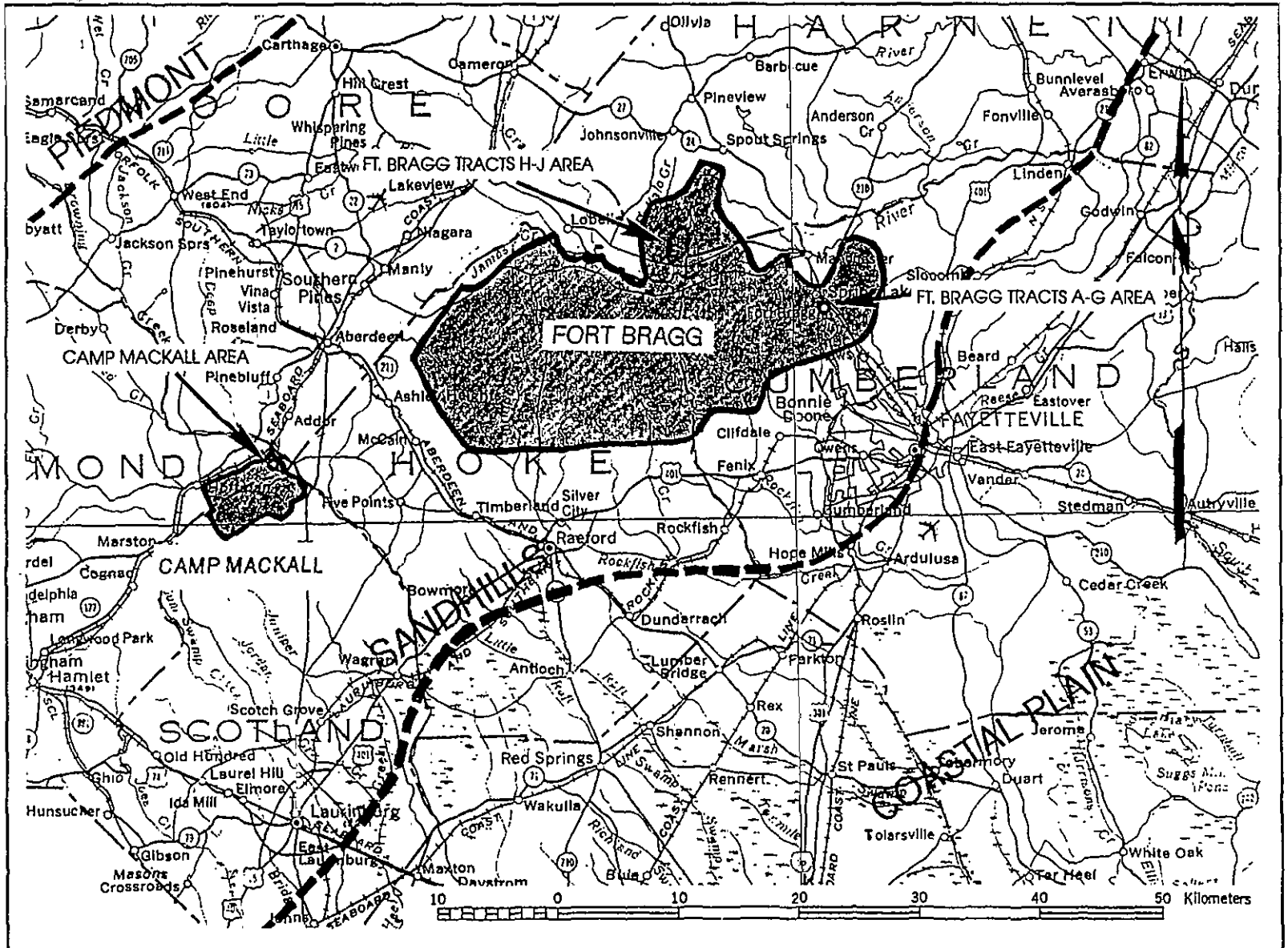

Figure 20. Physiographic setting of Fort Bragg and Camp Mackall in the Sandhills and the location of the 11 survey tracts.

The topography of all three counties consists of gently undulating hills with elevations ranging from about 200 to 500 feet above sea level. The Sandhills are characterized by broad, sandy ridges and long, less sandy sideslopes (Hudson 1984:2). Within the Camp Mackall Special Forces Training Area elevations range from a low of 270 feet above sea level along Drowning Creek to the north to a high of 310 feet above sea level at the southern boundary of the survey tract. Within the Fort Bragg general survey tracts, elevations range from a low of 197 feet above sea level in survey tract "D" to a high of 344 feet above sea level in survey tract "J".

The northeastern portion of Richmond County is drained by Drowning Creek which flows into the Lumber River. The eastern portion of the county is drained by Gum Swamp Creek and the western portion of the county is drained by the Pee Dee River. Naked Creek and Hitchcock Creek drain the northern portion of the county, flowing from Drowning Creek on the east to the Pee Dee on the west. Hamer Creek and Buffalo Creek, in the northwest, flow into the Lower Little River which drains into the Pee Dee River. Mountain Creek and Cartledge Creek flow directly into the Pee Dee, whereas numerous small tributaries in the east drain into Gum Swamp Creek.

The northern portion of Cumberland County is drained by the Lower Little River which drains into the Cape Fear River. The central portion of the county is drained by a number of small creeks. To the north, Carvers Creek, Cross Creek, and Little Cross Creek drain directly into the Cape Fear River. To the south, Stewarts Creek drains into Beaver Creek. Bones Creek, Beaver Creek, and Buckhead Creek all drain into Rockfish Creek which flows east to the Cape Fear River. The South River forms the western boundary of Cumberland county.

The northern and eastern portions of Harnett County are drained by the Black and Cape Fear Rivers, which flow through the northeastern portion of the county northwest to southeast. The southeast and eastern portions of the county drains into Mingo Swamp. Numerous smaller creeks, Avents Creek, Hector Creek, Neills Creek, West Buies Creek, Thortons Creek, and Juniper Creek drain into the Cape Fear River in the northern portion of the county. The central and western portion of the county is drained by McLean Creek, Duncan Creek, Jones Creek, Barbeque Creek, and Big Branch Creek which flow into the Upper Little River which, in turn, flows east and drains into the Cape Fear River. The southern portion of the county is drained by Cypress Creek, Buffalo Creek, Hector Creek, and Jumping Run Creek which flow into the Lower Little River in Cumberland County.

According to the State Board of Agriculture:

> [t]hrough the pine lands run numerous bold, strong and swiftly flowing streams, never diminished by drought and rarely excited by freshet. These, from the earliest settlement, furnished convenient mill-sites, and originated that active lumber industry so stimulating to the prosperity of the county and that the towns on the Cape Fear river; and, up to the successful introduction of cotton manufacture into the State, their power was speedily applied to the use of cotton-mills, which were built in the town of Fayetteville, on Cross and Blount's creek, on Buckhead, Beaver Dam and Rockfish (two of these) creeks, and on Lower Little River; and on all of these there are now large and flourishing cotton factories (State Board of Agriculture 1896:327).

As evidenced by the current vegetation throughout this survey, large areas of Camp Mackall and Fort Bragg have been clear cut for fields at one time. As a result, there have been some changes in the original physiography and drainage of the area. Over time, the topography of hills and drainages in these survey tracts have become less sharp and more gentle. It is possible that some sites, which today are found far from flowing water, had creeks or springs which flowed much closer to the site. A good example is 31HT215*. The site is located on a small terrace

adjacent to a drainage rim. Today, flowing water, Muddy Creek, is located about 390 m to the southwest (Figure 21).

The Fort Bragg general survey tracts are all wooded to some degree with a mixture of hardwood and pine. Survey tract "A" is drained by Tank Creek to the west which flows approximately 4 km north to the Lower Little River. The nearest drainage to survey tract "B" is Stewarts Creek, approximately 1,200 m to the west, which flows south and east into the Cape Fear River. The nearest source of permanent water to survey tract "C" is Big Branch Creek approximately 1,300 m to the northeast. Big Branch Creek flows into Beaver Creek which flows south and east into the Cape Fear River. Survey tract "D" is drained by Big Branch Creek which bisects the survey area. Survey tract "E" is drained on its eastern boundary by Beaver Creek. Survey tract "F" is also drained by Beaver Creek which flows approximately 350 m to the west. Survey tract "G" is drained by Stewarts Creek which forms the eastern boundary of the survey area. Survey tract "H" is drained by Muddy Creek which bisects the survey area. Muddy Creek flows into Jumping Run Creek which flows into the Little River some nine km to the southeast. Survey tract "I" is drained by Jumping Run Creek which forms the eastern boundary of the survey area.

Figure 21. Slope to intermittent drainage at 31HT215, view to the north.

Geology and Soils

Hudson (1984:2) describes the geology of the area simply as several layers of unconsolidated sediment (primarily of the Tuscaloosa Formation, deposited in the Upper Cretaceous period) underlain by bedrock which is composed of volcanic slate. This bedrock is generally 62 to 125 m below surface; however, near the town of McCain (just west of Fort Bragg), bedrock is found at about 34 m below surface. No bedrock is known to be exposed anywhere in the area.

Immediately available lithic resources consist of river pebbles that are of a relatively high quality quartz and found in gravel bars of the Lower Little River and the larger tributaries. Metavolcanic rock does not outcrop on Fort Bragg. However, there is a source located a relatively short distance away, about 16 km, on the Hoke-Moore county line (North Carolina Department of Conservation and Development 1958). Even greater numbers of resources are available in the Slate Belt, just within the Piedmont. Igneous rocks within the Slate Belt include rhyolite, andesite, and intrusive quartz veins.

Traditionally the soils of Richmond,

Cumberland, and Harnett counties have been identified as Norfolk-Ruston and Norfolk Sands (U.S. Department of Agriculture 1939:1069-1072). The Norfolk-Ruston soils were associated with the Coastal Plain, while the Norfolk Sands were associated with the Sand Hills. In neither area has climate favored the development of organic matter, so the soils are light-colored, predominantly sandy in the surface horizon, and range from coarse sands to fine sandy loams. Almost all are medium to strongly acid in reaction.

Today, modern soil science identifies 10 primary soil associations in Richmond County, 10 primary soil associations in Cumberland County, and seven primary soil associations in Harnett County. The Ailey-Wakulla-Candor Association is the only one associated with Camp Mackall. These excessively drained soils are located mainly on broad ridgetops, gentle toe slopes, and side slopes (Horton 1967). In Cumberland County two are associated with Fort Bragg — the Blaney-Gilead-Lakeland Association and the Wagram-Faceville-Norfolk Association. The former is characterized by excessively drained to moderately well drained soils on highly dissected uplands while the latter is characterized by well drained to poorly drained soils found on broad, smooth uplands (Hudson 1984). In Harnett County two are associated with Fort Bragg — the Gilead-Blaney-Candor and the Bibb-Wehadkee associations. The former is characterized by moderately well drained to somewhat excessively drained soils on long slopes and broad sandy ridges while the latter is characterized by poorly drained soils found on narrow flood plains.

The Camp Mackall Special Forces Training Area survey tract in Richmond County is characterized by Candor, Paxville, and Pelion soils. The most prominent soil type within the survey area is very poorly drained Paxville fine sandy loam with pockets of moderately well drained Pelion loamy sand in the north and central portions of the tract. The southern portion contains a small area of excessively drained Candor and Wakulla sandy loam (Figure 21).

The soils in the Fort Bragg Cumberland County survey tracts are characterized by Blaney, Candor, Dothan, Gilead, Johnston, Lakeland, and Vaucluse soils. Survey tract "A" exclusively contains Gilead soils (Figure 22). Survey tract "B" exclusively contains Vaucluse soils (Figure 23). Survey tract "C" contains primarily Blaney soils in the eastern three-quarters and Vaucluse in the western quarter (Figure 24). Survey tract "D" contains Blaney soils in the northwestern survey area, Gilead in the east and southeastern portion, and Wagram in the southern portion. Johnston soils are found along the creek line of Big Branch Creek (Figure 24). Survey tract "E" contains primarily Lakeland soils in the western portion with a small amount of Blaney soils in the eastern portion (Figure 24). Survey tract "F" contains Blaney soils in the northern portion, Gilead soils in the central portion, and Wagram soils in the southern portion of the survey tract with a sliver of Johnston soils between the Blaney and Gilead soils (Figure 24). Survey tract "G" contains Blaney soils in the western portion of the survey tract, Vaucluse soils to the north, and Gilead to the east and southeast. Johnston soils are found along the creek bed of Stewarts Creek (Figure 23).

The soils in the Fort Bragg Harnett County survey tracts are characterized by Blaney, Bibb, Candor, Gilead, Roanoke, Vaucluse, and Wakulla soils. Survey tract "H" primarily contains Bibb, Blaney, and Gilead soils in the northern portion of the survey tract and Blaney, Candor, and Gilead soils in the southern portion. These are interspersed with small pockets of Roanoke, Vaucluse, and Wakulla soils (Figure 25). Survey tract "I" primarily contains Candor soils in the west with Blaney and Wakulla soils dominate in the eastern portion of the survey area. Small pockets of Gilead and Roanoke soils are present in the eastern portion (Figure 26). Survey tract "J" contains primarily Blaney and Candor soils in the western portion of the survey tract and Blaney soils in the eastern portion. The central portion is made up of small pockets of Blaney, Gilead Roanoke, Vaucluse, and Wakulla soils (Figure 26).

Since the effects of erosion and soil deposition characteristics are important in determining site probability, typical soil profiles, as described by Horton (1967) and Hudson (1984),

are briefly discussed below. The occurrence of these soils in the survey tracts are also shown in Figures 22 through 26.

The **Bibb Series**, consists of poorly drained, moderately permeable soils with a 0 to 2% slope, which contain no B horizon but a recursive C horizon. The A horizon is approximately 25 cm in depth, consisting of dark grayish brown (10YR4/2) loam. This is followed by a Cg1 horizon of dark gray (10YR4/1) sandy loam which extends to 60 cm in depth.

The **Blaney Series**, characterized by Blaney loamy sand with a 2 to 8% slope, exhibits an A (or often Ap) horizon about 10 cm in depth consisting of dark grayish brown (10YR4/2) loamy sand. From 10 cm to a depth of 64 cm is an E horizon of light yellowish brown (2.5YR6/4) loamy sand. The underlying Bt1 horizon, to a depth of 87 cm, is a hard and compact brownish yellow (10YR6/6) sandy clay loam. Below this, to 1.58 m, is the Bt2 horizon of reddish yellow (7.5YR6/6) sandy clay loam. The Blaney soils have some of the higher soil erodibility factors present (ranging from .15 to .28).[1]

The **Candor Series** are characterized by somewhat excessively drained soils with a slope of 1 to 15%. The Ap horizon is typically a dark grayish brown (10YR4/2) sand which runs to 23 cm in depth. This is followed by an E horizon, to 50 cm, of a yellowish brown (10YR5/4) sand. The Bt horizon extends to 75 cm and is a yellowish brown (10YR5/6) loamy sand. This overlays an E'1 horizon of brownish yellow (10YR6/6) sand, followed by an E'2 horizon of brownish yellow (10YR6/6) sand which goes to 1.50 m in depth. The final horizon, a B't horizon of strong brown (7.5YR5/6) sandy clay loam with many medium and coarse distinct light gray (10YR7/1) and yellowish red (5YR5/8) mottles, extends to 2 m in depth.

The **Dothan Series** consist of well drained, moderately slowly permeable soils that form in loamy Coastal Plain sediments with a slopes ranging from 0 to 6%. The Ap horizon, 0 to 25 cm down, consists of brown (10YR5/3) loamy sand. This is followed by an E horizon of pale yellow (2.5YR7/4) loamy sand that extends to a depth of 30 cm. The Bt1 horizon, ranging from 30 to 45 cm below the surface is a yellowish brown (10YR5/6) sandy clay loam which is followed by Bt2 horizon of yellowish brown (10YR5/6) sandy clay loam that occurs to a depth of 65 cm. Below this the Bt3 horizon extends to 100 cm and is characterized by brownish yellow (10YR6/6) sandy clay loam mottled with a distinct red (2.5YR4/8) sandy clay loam.

The **Gilead Series** are moderately well drained soils with slopes that range from 2 to 25%. The upper 10 cm consists of an A horizon that is dark gray (10YR4/1) loamy sand. Below, to a depth of 33 cm, is an E horizon consisting of light yellowish brown (10YR6/4) loamy sand. The Bt1 horizon extends to 53 cm and is a brownish yellow (10YR6/6) sandy clay. The Bt2 horizon extends to 80 cm in depth, and consists of mottled strong brown (7.5YR5/6), brownish yellow (10YR6/6), and light gray (10YR7/2) sandy clay and sandy clay loam. The BC horizon appears between 80 cm and 1.70 m below surface and contains a reddish yellow (7.5YR6/6) and light yellowish brown (10YR6/4) sandy loam.

The **Johnston Series** consist of very poorly drained soils with a slope less than 2%. The A horizon is from 0 to 105 cm below the surface with very dark gray (10YR3/1) loam. Below 105 cm the ACg horizon begins and extends to a depth of 130 cm and is usually a dark grayish brown (10YR4/2)

[1] The soil erodibility factor (expressed as K) used in the universal soil loss equation is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff. It basically indicates the susceptibility of a soil to water-induced erosion. The soil loss tolerance factor (T), sometimes called the permissible soil loss, is more often used to help quantify wind-induced erosion. This factor is expressed as the maximum rate of soil erosion that will still permit a high level of crop productivity. It is therefore somewhat less useful in these discussions. Regardless, all of the discussed soils in the Camp Mackall project area have the maximum T rating of 5, or 5 tons of soil per acre per year.

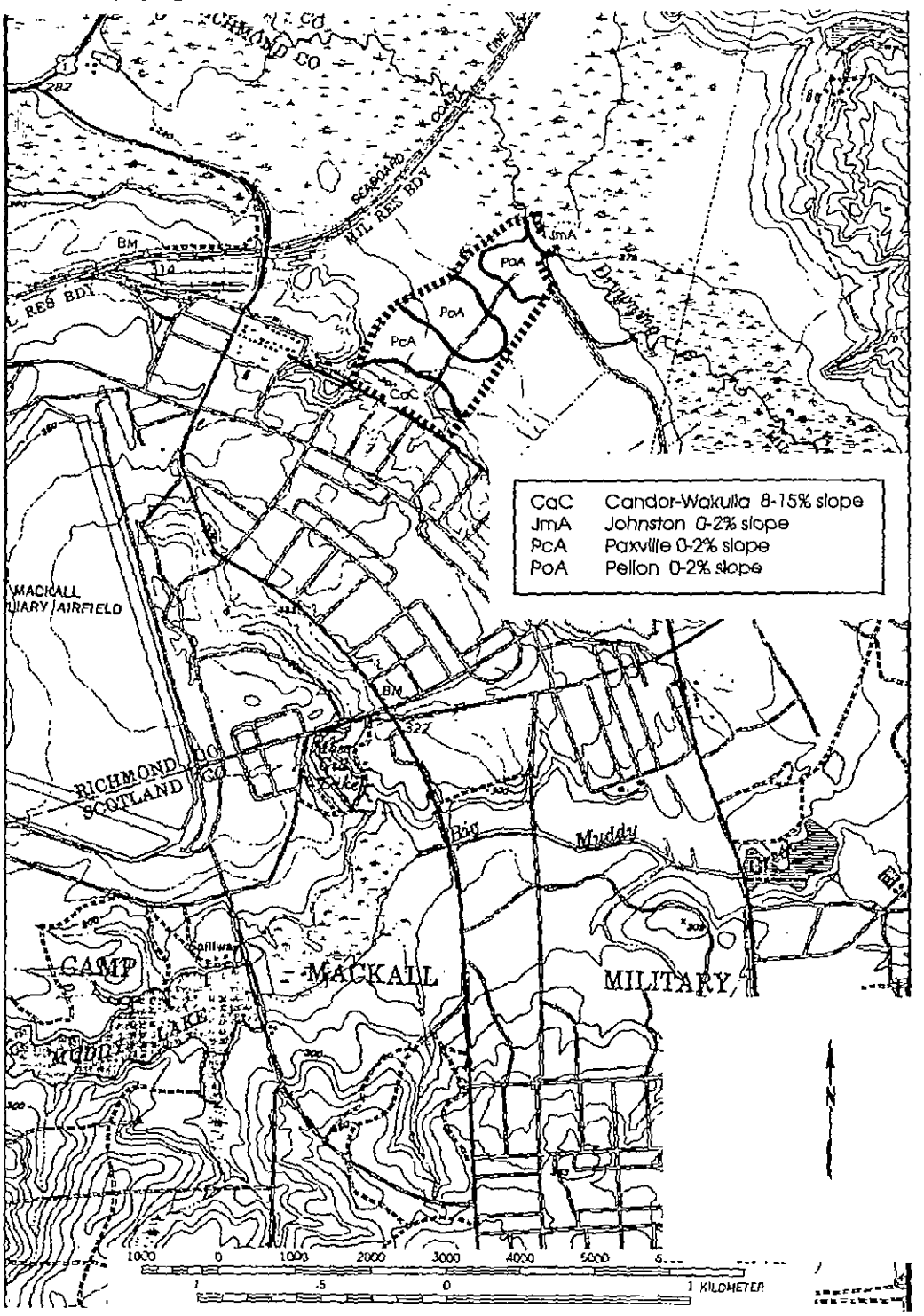

Figure 22. Soils of the Camp Mackall Special Forces Training Area survey tract.

Figure 23. Soils of Fort Bragg general survey tract "A".

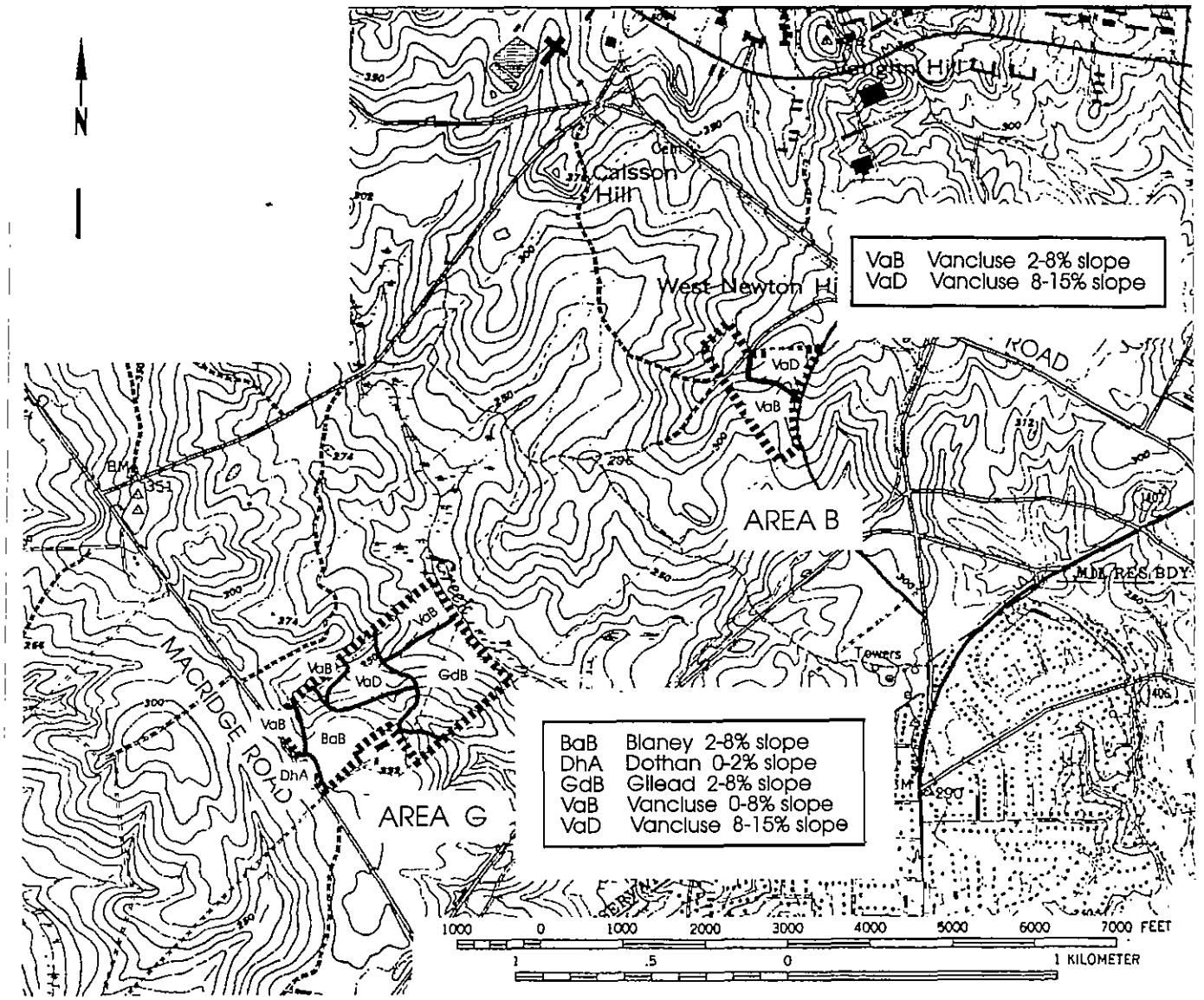

Figure 24. Soils of Fort Bragg general survey tracts "B" and "G".

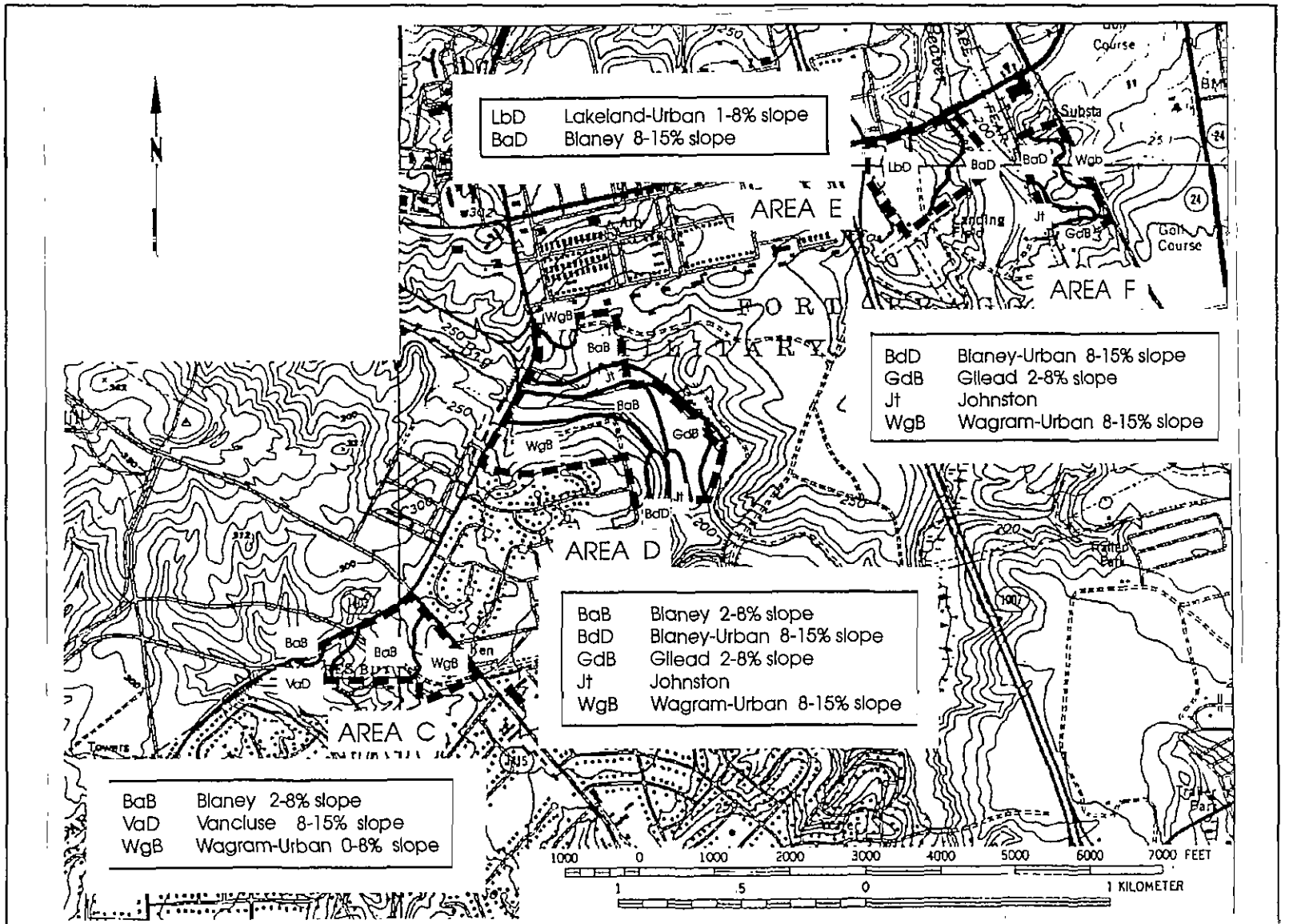

Figure 25. Soils of Fort Bragg general survey tracts "C", "D", "E", and "F".

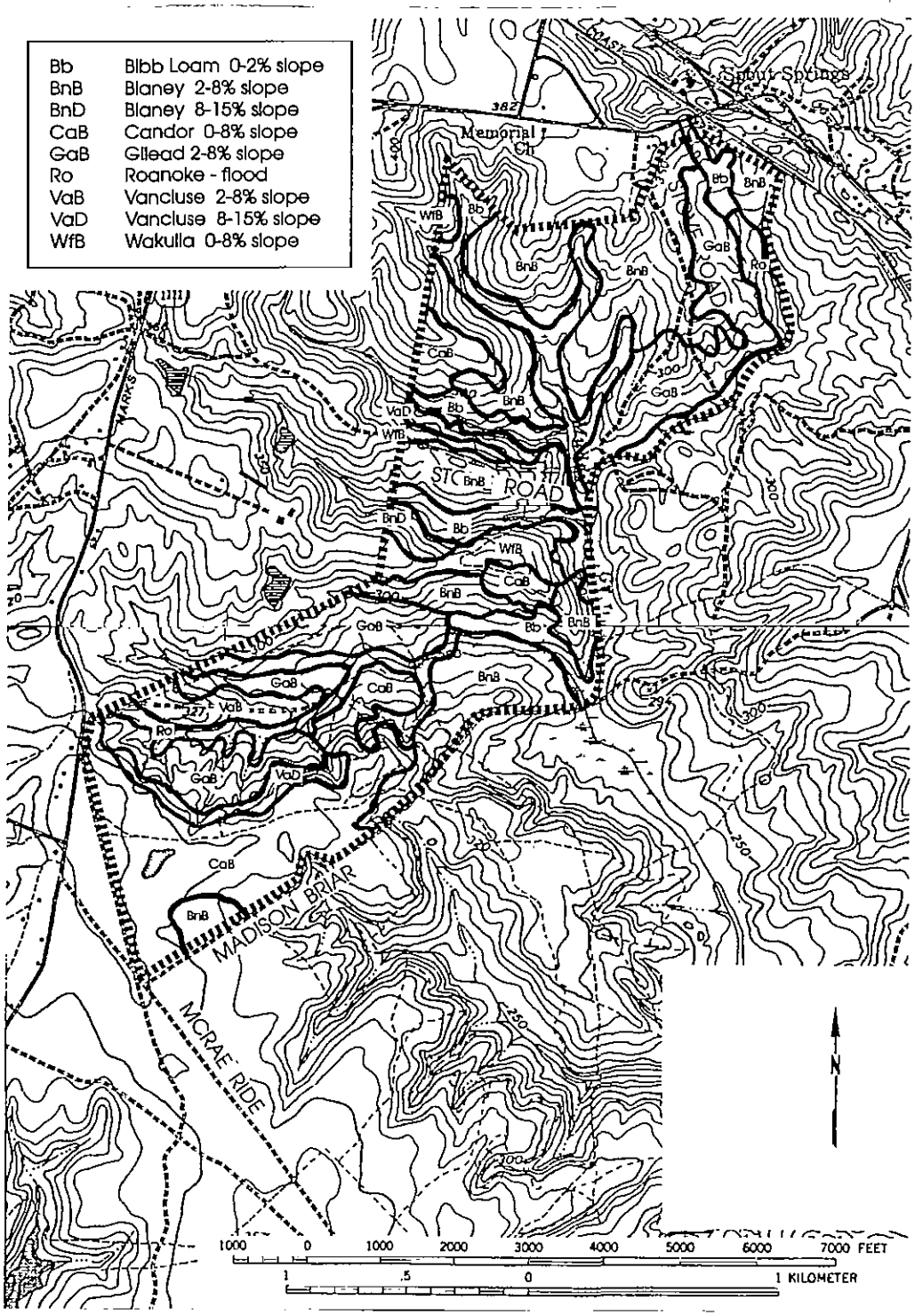

Figure 26. Soils of Fort Bragg general survey tract "H".

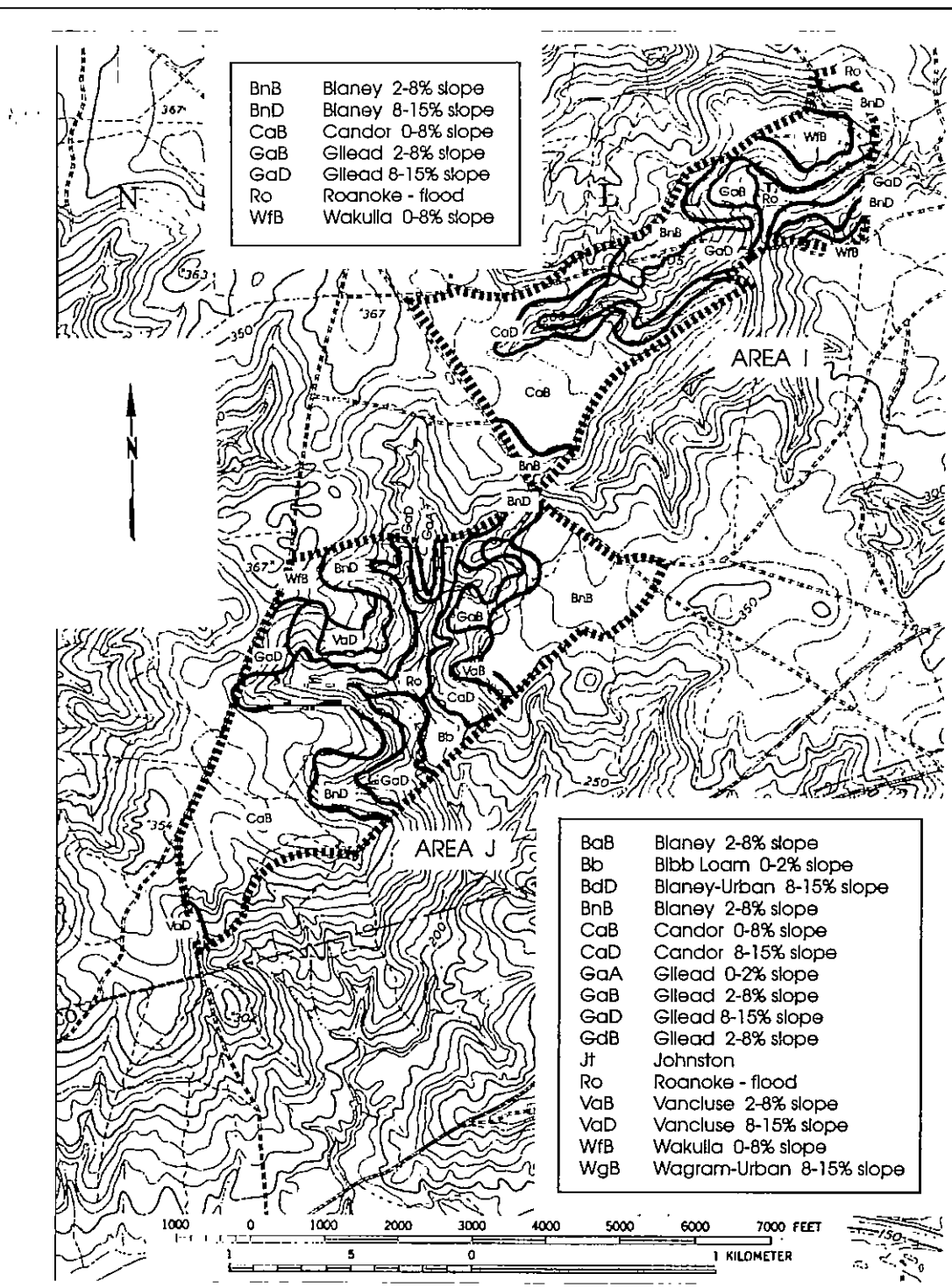

Figure 27. Soils of Fort Bragg general survey tracts "I" and "J".

sandy loam.

The **Lakeland Series**, formed in the uplands and consisting of excessively drained soils, will typically have a profile with Ap soils, usually dark gray (10YR4/1) sand, to 15 cm. Below the Ap soils, to a depth of 38 cm, is the C1 horizon characterized by yellowish brown (10YR5/6) sand. The C2 horizon, to a depth of 1.12 m, consists of strong brown (7.5YR5/8) sand.

The **Paxville Series** consist of very poorly drained soils with a slope of less than 2%. The A horizon, about 35 cm in depth, is a very dark brown (10YR2/2) sandy loam. This overlies a BA horizon of very dark gray (10YR3/1) sandy loam which contains common course faint very dark grayish brown (10YR3/2) mottles and common brownish yellow (10YR6/8) mottles which extends to 43 cm in depth. This is followed, to a depth of 1.0 m, by the Btg horizon which is a dark grayish brown (10YR4/2) sandy clay loam with common medium prominent reddish yellow (7.5YR6/8) mottles.

The **Pelion Series** typically consist of very deep, moderately well drained soils that formed in loamy marine sediments. Slopes range from 0 to 15%. The A horizon occurs from 0 to 18 cm and is a brown (10YR5/3) loamy sand. This is followed by an E horizon that extends to a depth of 35 cm. This horizon is characterized by very pale brown (10YR7/3) loamy sand. The Bt horizon of yellow (10YR7/6) sandy clay loam reaches a depth of 48 cm. From 48 to 64 cm, the Btx1 horizon consists of yellow (10YR7/6) sandy clay loam mottled with light gray (10YR6/1). Below this, the Btx2 horizon of brownish yellow (10YR6/8) sandy clay loam extends to a depths of 81 cm. From 82 to 114 cm the BC horizon of brownish yellow (10YR6/8) sandy clay loam mottled with light gray (10YR7/2) occurs.

The **Roanoke Series** consists of poorly drained soils that formed in stratified clayey sediment on terraces of the Cape Fear River and it's major tributaries. These soils have a slope of less than 2%. The Ap horizon occurring from 0 to 20 cm is a grayish brown (10YR5/2) loam. This is followed by a BAg horizon of light brownish gray (10YR6/2) clay loam that extends down to 30 cm. The Btg1 horizon of gray (10YR6/1) and dark gray (10YR4/1) clay reaches a depth of 75 cm with yellowish red (5YR5/8) mottles and yellowish brown (10YR5/8) streaks. This is followed by Btg2 horizon of gray (10YR6/1) clay mottled with yellowish red (5YR5/8) and yellowish brown (10YR5/8) which extends to 120 cm.

The **Vaucluse Series** consists of well drained soils that formed in loamy Coastal Plain sediments with slopes ranging from 2 to 25%. The A horizon, dark brown (10YR4/3) loamy sand, occurs from 0 to 7.5 cm below the surface. This is followed by the BA horizon of strong brown (7.5YR5/6) sandy loam that extends to 15 cm. From 15 cm down to 40 cm is the Btx1 horizon, which consists of yellowish red (5YR5/8) sandy loam. This is followed by the Btx2 horizon, a yellowish red (5YR5/8) sandy loam with a depth of 75 cm. The Btx3 horizon occurs at a depth of 75 to 110 cm and is a strong brown (7.5YR5/8) sandy loam mottled with yellow (10YR7/6).

The **Wagram Series** contains well drained soils that have slopes which range from 0 to 15%. The Ap horizon extends to a depth of 20 cm and is a grayish brown (10YR5/2) loamy sand. This is followed, to 60 cm, by an A2 horizon of pale brown (10YR6/3) loamy sand with common medium faint yellowish brown (10YR5/4) mottles. The B1 horizon extends 68 cm and consists of yellowish brown (10YR5/8) sandy loam. This overlays a B21t horizon, extending to 95 cm and containing a yellowish brown (10YR5/8) sandy clay loam with common medium prominent red (2.5YR4.6) and common medium distinct strong brown (7.5YR5/6) mottles. A B22t horizon extends to 1.30 m and contains a yellowish brown (10YR5/8) sandy clay loam along with common medium distinct red (2.5YR4/6), few medium distinct light brownish gray (10YR6/2), and common medium faint light yellowish brown (10YR6/4) mottles. The B3 horizon runs to a depth of 1.88 m and is a yellowish brown (10YR5/6) sandy clay loam. The C horizon extends to over 2 m in depth and is a yellowish brown (10YR5/6) sandy loam.

The **Wakulla Series** consists of excessively

drained soils on broad sand hill ridges in the uplands. Slopes range from 0 to 8%. The A horizon extends from 0 to 10 cm and is a brown and dark brown (10YR4/3) sand. The E horizon follows with brownish yellow (10YR6/6) sand that extends to a depth of 27.5 cm. From 27.5 cm to 90 cm the Bt horizon occurs and is characterized by yellowish brown (10YR5/8) loamy sand. Below this is the C1 horizon of brownish yellow (10YR6/8) sand which extends to a depth of 135 cm.

Although this study produced a very small sample, all but two of the prehistoric sites were found on excessively to moderately well drained soils. The historic sites also occur on well drained soils. The one prehistoric site found in the Camp Mackall Special Forces Training Area survey tract occurred on moderately well drained Pelion soils. Within the Fort Bragg general survey tracts all but two sites were found to occur on excessively drained Candor and Waukulla sands, moderately well drained Gilead loamy sands, and well drained Blaney and Vaucluse sands. Only two sites were found on poorly drained Bibb soils.

Typically, the Sand Hills region experiences relatively little erosion. In undisturbed areas 0.012 t of soil loss per ha per year has occurred. Logged areas experience about 0.319 t of soil loss per ha per year. The most destructive erosional situation described by the United States Department of Agriculture (1980:25) are logging roads where erosion consists of 22.46 t of soil loss per ha per year. From the combination of logging and logging roads we can expect upwards of 22.779 t of soil loss per ha per year.

Wayne Trimble (1974) studied the effects of man-induced erosion in the southern Piedmont, the Carolina Sand Hills, the southern Coastal Plain, and the Atlantic Coast Flatwoods. His studies concentrated on areas throughout central North Carolina, South Carolina, and Georgia. He determined that in undisturbed areas of the Sand Hills approximately 0.002 t of soil loss per ha per year has occurred (Trimble 1974:25). Logged areas in the Carolina Sandhills experience .053 t of soil loss per ha per year (Trimble 1974:25). Logging roads experience 3.67 t of soil loss per ha per year and that associated skid trails suffered 2.203 t of soil loss per ha per year. According to Trimble (1974:25) total erosion from logging operations and associated skid trails and logging roads contributes to a total of 5.93 t of soil loss per ha per year within the Carolina Sandhills.

Heavy erosion has been observed in previous studies conducted at the Sicily Drop Zone (Trinkley et al. 1996), and the Camp Mackall Drop Zone (Trinkley et al. 1996), where clear cutting has occurred. Although the current study did not include already cleared drop zones, it does incorporate areas that had been recently logged, as well as areas slated for future logging operations. The monitoring of the sites investigated during this study may, over time, determine the short term affects of these types of clear cutting procedures on soil erosion, as well as the extant archaeological resources.

Climate

North Carolina is part of the warm temperate zone, characterized by what might be called a placid climate, with local variations due partially to the tremendous range in elevation from the mountains to the coast. Centrally located Hoke County is generally hot and humid in the summer because of the moist, maritime air. The winters are moderately cold but short since the mountains to the west protect the area from many cold waves. The average winter temperature in nearby Fayetteville is 6°C. In the summer the average daily temperature is 26°C in Fayetteville. In general, spring comes earlier to the Sand Hills than to the adjacent Piedmont since the loose, well-drained soils can warm more rapidly. This benefit, however, is coupled with the general dryness of the soils. The total annual precipitation is 1.07 m. Of this, 60% usually falls in April through September, which includes the growing season for most crops (Hudson 1984:2; see also Reed 1936).

During the late Pleistocene and early Holocene periods temperatures were considerably cooler than they are today. Temperatures began to moderate and approach modern temperatures around 7,000 B.P. along the Southeast Atlantic Slope (Wright 1976:594). A more thorough discussion is provided below relating vegetational

change to these climatic ranges.

Floristics and Paleoenvironment

The Sandhill Province is dominated by longleaf pine and various xeric oaks such as post oak, Margaret's oak, bluejack oak, and turkey oak. In addition, much of the overstory vegetation includes sweetgum, beech, southern red oak, mockernut hickory, and southern sugar maple (Barry 1980:139-140; Gade and Stillwell 1986). This, in general, adequately characterizes the vegetation of Camp Mackall and Fort Bragg. Loftfield observed that the vast majority of the post consisted of "droughty sandy upland habitat longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*), with a ground cover of wire grass (*Gaylussacia dumosa*)" which was being kept in balance by periodic controlled burns (Loftfield 1979:9).

In the 1860s only about 10% of what would later become Hoke County was improved for cultivation (Hilliard 1984:Map 44), while by the 1940s about 25% of the county was cropped with around 70% being forested (Cruikshank 1944:11-12). Only about 7% of Fort Bragg, however, was being cultivated prior to its purchase by the military in the second decade of the twentieth century. Cotton and corn were historically produced on the bottomlands, while the rolling sandy uplands were dominated by smaller farms producing grains and fruits. The area, before the Civil War, was the site of experiments in the production of tea (State Board of Agriculture 1896:327).

Pollen cores obtained from the Southeastern Coastal Plain indicate a sequence of successional forest types from the Full Glacial through the Post Glacial periods (Watts 1971; Whitehead 1965). Prior to strong evidence of human population (pre-15,000 B.P.), cold-adapted vegetation, predominately spruce and jack pine, was found in the Piedmont and Coastal Plain area. Other less common species included oak and ironwood. All of these species suggest a much colder and drier environment than found today (Watts 1980:326). Some have suggested that this climate was much like today's eastern Canadian boreal forests, dominated by pine and spruce distributed in a mosaic pattern of stands within sedge-dominated prairies. There is evidence for parabolic dune formations during the Full Glacial period as derived from sediments from the Pee Dee River. These dune fields are also present north of the Cape Fear. This arid phase is also evidenced in the pollen record of Singletary Lake where there is an increase in the sand fraction during this period (Whitehead 1973; Claggett and Cable 1982).

The somewhat warmer and moister environment evidenced in the Late Glacial (15,000 to 10,000 B.P.) is associated with an increase in deciduous species. Northern hardwoods, such as oak, hickory, beech, birch, and elm began replacing the spruce and jack pine populations. This change corresponds with warmer summer temperatures and colder winter temperatures, as well as an increase in precipitation. It is during this period that the first moderately well documented evidence for human occupation occurs (Watts 1980; Sassaman et al. 1990:21). This period was also a transitional period between the glacial Late Pleistocene and the essentially modern climatic conditions of the Holocene. The resulting mesic forest, with its relatively high percentages of beech and hickory, has no modern analog and was the result of the cool, moist conditions which characterized this transition.

During the Post Glacial (10,000 B.P. to present) oak and hickory dominated the region. Other species such as walnut, hemlock, and hazelnut disappeared from the pollen record. By 9,500 B.P. hickory and ironwood species declined and were replaced by sweetgum and blackgum. These changes prior to 7,000 B.P. suggest periods of rapid warming and increased moisture (Watts 1980; Watts and Stuiver 1980). It has been observed that these very rapid environmental changes would have created a dynamic ecosystem requiring constant adaptive adjustments on the part of early groups (Cable and Mueller 1980:7).

In the Sandhills region southern pine communities displaced the oak-dominated forests between 8,000 and 6,000 B.P. which led to a decrease in nut mast production (Sassaman et al.

1990:22). This vegetational change probably had an effect on prehistoric land use during certain times of the year, since nut masts were probably more isolated and concentrated rather than widespread. Coupled with these vegetational changes was a cooler, moister climate (Watts 1971 and 1980).

Brooks et al. (1986) suggest that not only latitude, but also elevation affected when vegetational changes occurred. As a result, broad environmental changes probably occurred first in the Coastal Plain.

From about 5,000 B.P. and continuing to the present, Whitehead (1973) found pine increasing slightly, although oak appeared to remain dominant in natural forest stands. The precontact environment of the Piedmont Southeastern United States was termed "temperate deciduous forest" by Shelford (1974:56-88) with oak and hickory interspersed with pine, maple, ash, and other deciduous species (for a graphic representation see Shantz and Zon 1936). Küchler (1964) identifies the "potential natural vegetation" of the Fort Bragg area as that of the Southern Mixed Forest, surrounded by the more common Oak-Hickory-Pine Forest. Küchler's forests represent what would "exist today if man were removed from the scene and if the resulting plant succession were telescoped into a single moment" (Küchler 1964:2). The result for the project area would be tall forests of broadleaf deciduous and evergreen and needleleaf evergreen trees. The dominants would include beech, sweet-gum, southern magnolia, slash pine, loblolly pine, white oak, and laurel oak. Hickories would occur as minor components, along with dogwood and hollies.

By the historic period the Sand Hills were dominated by loblolly pine. Although the name means, literally, "mud puddle," and was likely applied since the tree grew on wet soils, the loblolly is also known as the "bull pine" because of its prodigious size and remarkable ability to invade dry, flat terrain and even the hilly uplands. The pines formed vast, open forests interrupted only by the occasional inland swamp and its accompanying hardwoods.

The Sand Hills, their soil, and their vegetation frequently attracted the attention of observant commentators. One, Edmund Ruffin, remarked in 1843 that:

> the land hereabouts is barren, or but triflingly productive. The middle grounds between the rivers are the highest, and consequently the most barren . . . . Their soil is of so sterile a nature, that in many places it produces no grass to cover it; and the tracks of any animal passing over it, are discernable, as if they had been upon snow. The low grounds among these hills are either extensive swamps and bays, or narrow valleys, into which, the mould from the adjacent high lands have been deposited by the rains which run down their sides. Hence they become suitable for agriculture and pasturage, and are principally those places, near which settlements are effected (Mathew 1992:4).

On another occasion Ruffin commented:

> the soil is of deep sand & very poor. The growth pine intermixed with small scrub & other oaks. . . the country seems as desolate as possible. Not a creature was seen, nor any mark of man's neighborhood, save the deep sandy track in which I was riding (Mathew 1992:262).

European occupation of the countryside, including occupation of the Sand Hills, gradually changed its appearance. The pines which dominated the topography, for example, began to give way to scrubby hardwoods by the early 1800s (Silver 1990:187). It is almost certain that the process was largely completed by the time that Ruffin traveled across the region in the mid-1800s. Yet there were other, equally momentous changes. Turkeys and other wild fowl were less common, the

flocks of Carolina parakeets and passenger pigeons were on the verge of extinction. Buffaloes were already gone from the neighboring Piedmont. In the lowland swamps the beavers, otters, and minks were close to gone, as were other occasional visitors such as bears, wolves, panthers, and bobcats.

The countryside was becoming increasingly dominated by small farms. The new ecology, created by clearing and farming grains, encouraged flocks of quail. While the minks and otters gave way to hunting pressures, they were quickly replaced by the opossum. But into the nineteenth century the most common animals were the cattle, hogs, and sheep brought by the Sand Hill settlers. Silver notes that, "fewer canebrakes and overgrazed mixed hardwood forests attest to the forage habits of these Old World Beasts" (Silver 1990:187-188). The changes were dramatic, gradually giving rise to the Sand Hills we know today.

PREHISTORIC AND HISTORIC OVERVIEW

Previous Research

Some of the earliest archaeology within south central North Carolina includes the 1860 excavations by Hamilton MacMillan of a mound southwest of Fayetteville, near Rockfish Creek (Holmes 1916). The mound, about 0.5 m high and 6 m in diameter, contained a large number of skeletons, reputed to have represented as many as 50 individuals. Although Holmes offered no temporal estimate for this and similar mounds in the vicinity, he did note that, "they are quite different from those mounds of Caswell and other counties of the western section of the state, and of much less interest so far as contents are concerned" (Holmes 1916:19). This was one of the earliest accounts of the differences between the "treasures" found in Mississippian temple mounds and the dearth of remains which characterized Middle Woodland burial mounds.

Nearly 30 years later, Charles Peabody visited Cumberland County on vacation with his daughter. During this respite he excavated four mounds near Hope Mills (Peabody 1910:429; Coe 1983:165). His findings paralleled the earlier studies of Holmes. Found were human bones, smoking pipes, a celt, a shell gorget, and similar Middle Woodland artifacts. Peabody's work also revealed the relatively strong local interest in the past. Peabody's contact, Dr. J.W. McNeil, was a participant on another archaeological excursion which "explored" a mound south of Little Rockfish Creek about 24 km southwest of Fayetteville (Oates 1972:328-329).

The next archaeological activity in the Fayetteville area was probably the work of Howard MacCord, who was stationed at Fort Bragg in the early 1960s. Intrigued by the mounds in the area he excavated one of them, the McLean Mound on the east side of the Cape Fear River (MacCord 1966). The mound, which was apparently as high as 1.8 m in the 1920s had eroded down to just over a half meter by the time of the study. Perhaps MacCord's most significant contribution was keeping alive the interest in burial mound studies (see Coe et al. 1982; Phelps 1983; Wetmore 1978; Wilson 1982).

Previous archaeological work at Fort Bragg includes Loftfield (1979), McCullough (1985), Jameson (1986a, 1986b), Braley (1988, 1990), Braley and Schuldenrein (1993), King et al. (1992); and Abbott (1994; 1995).

Loftfield's (1979) study consisted of a reconnaissance level survey of about 6,690 ha which consisted of a 15% sample of the entire Fort Bragg property. He recorded 490 archaeological sites of which 16 (or 3.2%) occurred within the boundaries of the Camp Mackall Military Reservation. None of Loftfield's sites were found within either the Camp Mackall Special Forces Training Area survey tract or in any of the survey tracts associated with the Fort Bragg general survey. Loftfield found that prehistoric sites were most often located on hilltops, toe slopes, upland flats, and saddles. Usually they occurred in association with rank 1 streams or springs and were found on sandy soils. Typically the sites were located on a northern, northeastern, or eastern slope face. He predicted that at Fort Bragg the average site density would be 10 sites per km^2.

During Braley's (1988) work at the Northern Training Area, he tested Loftfield's model for site location and found it to be useful (see also Braley 1990:22). However, Braley (1988) recorded many more sites (15.8 sites per km^2) than predicted by Loftfield's model. Of course, Loftfield's predictions were based on a reconnaissance level study where primarily fire break roads and drop zones were surveyed, whereas Braley's (1988) work consisted of an intensive survey of a 15% random sample. He found that site density was slightly higher in lowland settings (1990:23). Both Loftfield's and

Braley's models focussed on prehistoric resources, None of Braley's (1990) sites were found within any of the Fort Bragg general survey tracts although, a number were situated outside of the survey boundaries of survey tracts "H", "I", and "J" (Figure 28 and 29).

A notable early attempt to establish prehistoric settlement patterns was undertaken in 1980 using National Park Service Survey and Planning grant funds to explore Sampson County, situated east of and adjacent to Cumberland (Hackbarth and Fournier-Hackbarth 1981). This study identified 196 sites, and environmental and locational attributes for a random sample were examined in the hope of establishing predictive models. The results, however, were rather mixed. Most sites were found (not unexpectedly) near water sources. There was also a correlation between some loamy sands and sands and sites in general (Hackbarth and Fournier-Hackbarth 1981:78), although there seemed to be no preference by temporal period. Attempts to determine preferences for different lithic materials by time period were also largely unsuccessful (Hackbarth and Fournier-Hackbarth 1981:78).

In 1986 Kenneth Robinson conducted a series of reconnaissance level studies for the Cumberland County Commissioners and Administrators as part of a NPS Survey and Planning Grant. His findings document the exceptional diversity of prehistoric and historic resources in Cumberland County, although given the nature of the study no clear statements could be made concerning either site densities or predictive models (Robinson 1986:44).

In neighboring Moore County, King et al. (1992) also found that there was a preference for lowland settings. However, the sites in the uplands were larger, a departure from Braley's (1990) expectations that larger sites would be found in the lowlands. King et al. (1992:125) concluded that upland sites were occupied for longer periods of time and perhaps by more people at any given time. Site density here was similar to that found by Braley (1990) (15.2 site per km^2).

Although there has been a great deal of survey information gathered from the Sandhills region, there have been few excavations. Some limited excavations were conducted at a prehistoric site identified during the survey of the Rockfish Creek Wastewater Sewage Treatment Facility in southern Cumberland County. McLean and Sellon (1979) note that the site was a "mixture of Woodland and Archaic artifacts" overlying a "sparsely occupied zone of Archaic lithic material with no diagnostic artifacts" about 40 cm below the surface (McLean and Sellon 1979:65). The modest assemblage included Archaic projectile points and several hundred sherds. As Robinson (1986:42) points out, "there is still a need for re-evaluation and synthesis of the material" and little more can be said about this study.

Sassaman et al. (1990) have excavated a number of sites at the Department of Energy's Savannah River Site in the Sandhills of South Carolina. Sassaman et al. (1990) excavated several Woodland Period sites which are interpreted to have functioned as residential bases. These sites are characterized by rock clusters (which are assumed to be hearths or food preparation areas), discrete clusters of lithic debitage, and household areas which contain few artifacts.

While further removed, it seems almost inconceivable not to mention at least a few sites on which much of North Carolina's prehistoric chronology is based. About 65 km from Fort Bragg to the northwest is the Town Creek mound and village site. Described by Loftfield (1979:12) as the "great center of Pee Dee culture," it might better be viewed, at least culturally, as a small mound in a big pond. Regardless, work there has defined the Pee Dee culture, ceramics, and people (Coe 1983, 1995; Ferguson 1971; Reid 1967). About 80 km to the northwest are the equally important sites of Hardaway and Doerschuk (along with the less well reported sites at Morrow Mountain and Lowders Ferry) (Coe 1949, 1964).

Historic resources have tended to take a "back-seat" to prehistoric sites in the research conducted in the general vicinity of Fort Bragg. During surveys for the Rockfish Creek Wastewater Sewage Treatment Facility, Robinson mentions that the location of "Folly Fort," a Confederate

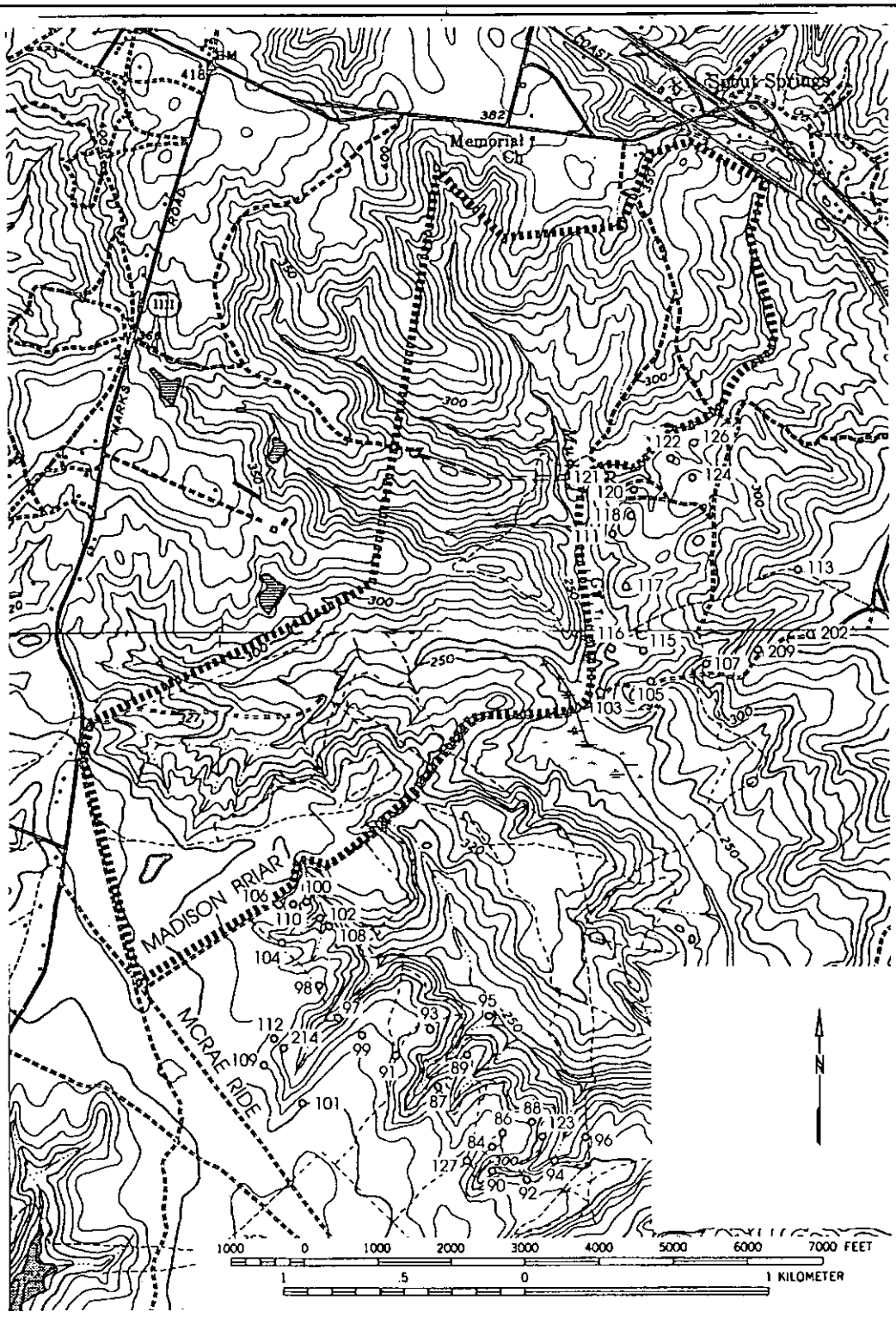

Figure 28. Sites identified by Braley (1990) in association with Fort Bragg general survey tract "H" (all numbers are preceded by 31HT).

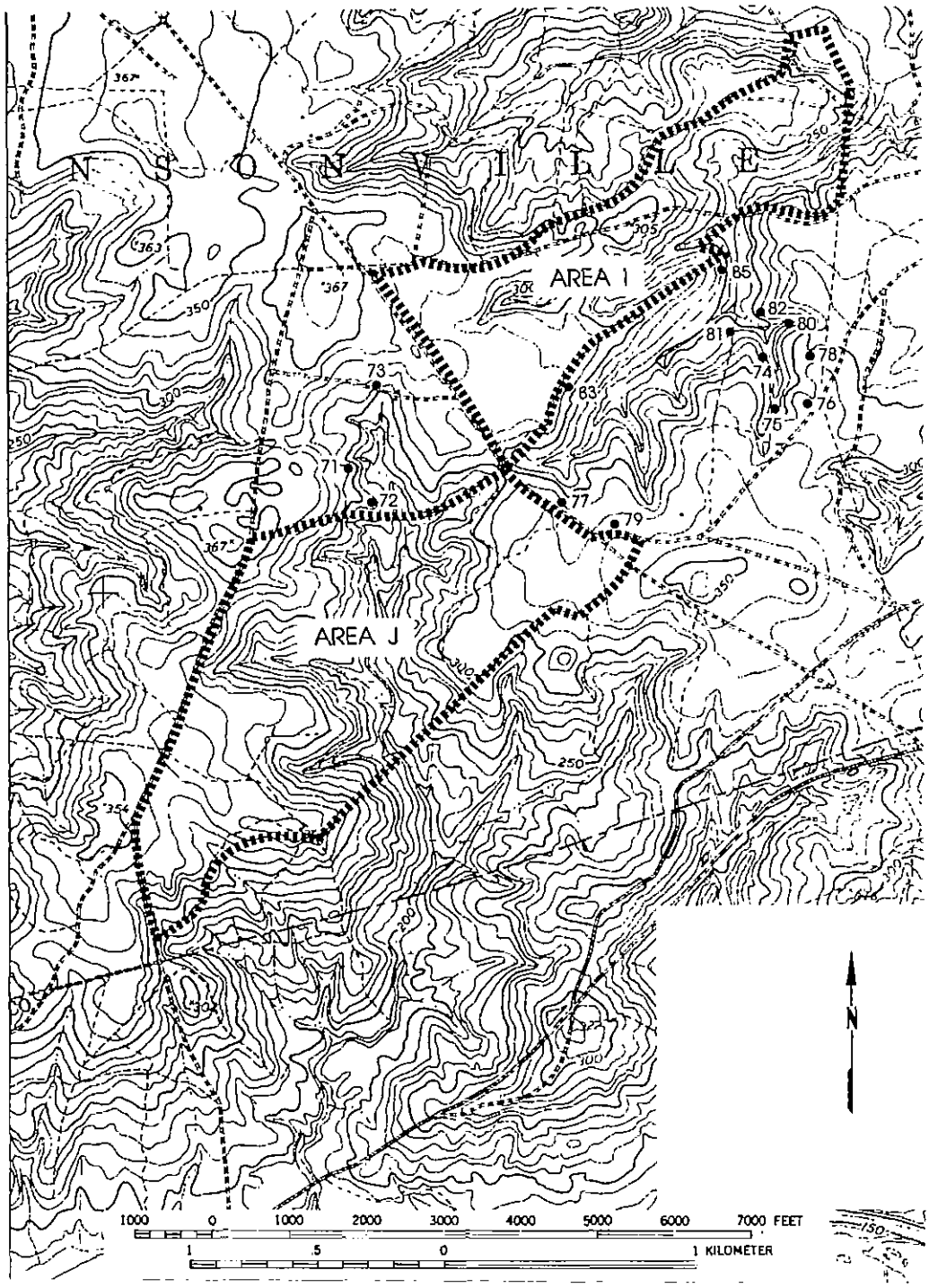

Figure 29. Sites identified by Braley (1990) in association with Fort Bragg general survey tracts "I" and "J" (all numbers are preceded by 31HT).

Civil War fortification built to defend the Cape Fear River, was identified (Robinson 1986:52). Otherwise, historical archaeology has tended to focus on urban research in Fayetteville (for a synopsis see Robinson 1986:46-48).

Turning to South Carolina, Brooks and Crass (1991) have published a predictive model for historic resources on the Savannah River Site based on survey and archival data. While early pioneers settled on the Savannah River, by the late eighteenth century, settlements had progressed up the larger drainages. A similar situation appears to have occurred in the Cape Fear River Valley (see Meyer 1961: Maps V-VIII; Loftfield 1979).[1] As better road systems developed in the nineteenth century, settlement became more road oriented (Brooks and Crass 1991:78-79). However, Abbott et al. (1995:23) point out that because the Sandhills soils were poor for growing crops, particularly in the uplands settlers were deterred from living in this area. It is likely that only lands bounded by creeks or rivers were found to be suitable for agriculture. A similar observation was made for neighboring South Carolina by Edmund Ruffin in the late antebellum (Mathew 1992). This suggests that historic settlement patterning may have changed very little through the county's history.

Prehistoric Overview

Overviews for North Carolina's prehistory, while of differing lengths and complexity, are available in virtually every compliance report prepared. There are, in addition, some "classic" sources well worth attention, such as Joffre Coe's *Formative Cultures* (Coe 1964), as well as some new general overviews (such as Phelps 1983 and Ward 1983). These can be supplemented with a broad range of theses and dissertations produced by students of North Carolina's colleges and universities. Also extremely helpful, perhaps even essential, are a handful of recent local synthetic statements, such as that offered by Sassaman and Anderson (1994) for the Middle and Late Archaic. Only a few of the many sources are included in this study, but they should be adequate to give the reader a "feel" for the area and help establish a context for the various sites identified in the study areas. For those desiring a more general synthesis, perhaps the most readable and well balanced is that offered by Judith Bense (1994), *Archaeology of the Southeastern United States: Paleoindian to World War I*. Figure 14 offers a generalized view of North Carolina's cultural periods.

Paleoindian Period

The Paleoindian Period, most commonly dated from about 12,000 to 10,000 B.P., is evidenced by basally thinned, side-notch projectile points; fluted, lanceolate projectile points, side scrapers, end scrapers; and drills (Coe 1964; Michie 1977; Williams 1968). Oliver (1981, 1985) has proposed to extend the Paleoindian dating in the North Carolina Piedmont to perhaps as early as 14,000 B.P., incorporating the Hardaway Side-Notched and Palmer Corner-Notched types, usually accepted as Early Archaic, as representatives of the terminal phase. This view, verbally suggested by Coe for a number of years, has considerable technological appeal.[2] Oliver suggests a continuity from the Hardaway Blade through the Hardaway-Dalton to the Hardaway Side-Notched, eventually to the Palmer Side-Notched (Oliver 1985:199-200).

[1] In Cumberland County there is good evidence that occupation spread up creeks, especially Rockfish Creek, with numerous small villages established on the banks of Cross Creek and even further upstream along the Cape Fear. One historic village which documents this settlement pattern is Cross Creek. Situated 1.6 km west of the Cape Fear River, on the banks of Cross Creek, the village was the terminus for river traffic and the point of origin for roads being built into the interior. By 1770 it contained about a hundred structures, including grist mills, a tannery, a brewery, and a sawmill.

[2] While never discussed by Coe at length, he did observe that many of the Hardaway points, especially from the lowest contexts, had facial fluting or thinning which, "in cases where the side-notches or basal portions were missing, . . . could be mistaken for fluted points of the Paleo-Indian period" (Coe 1964:64). While not an especially strong statement, it does reveal the formation of the concept. Further insight is offered by Ward's (1983:63) all too brief comments on the more recent investigations at the Hardaway site (see also Daniel 1992).

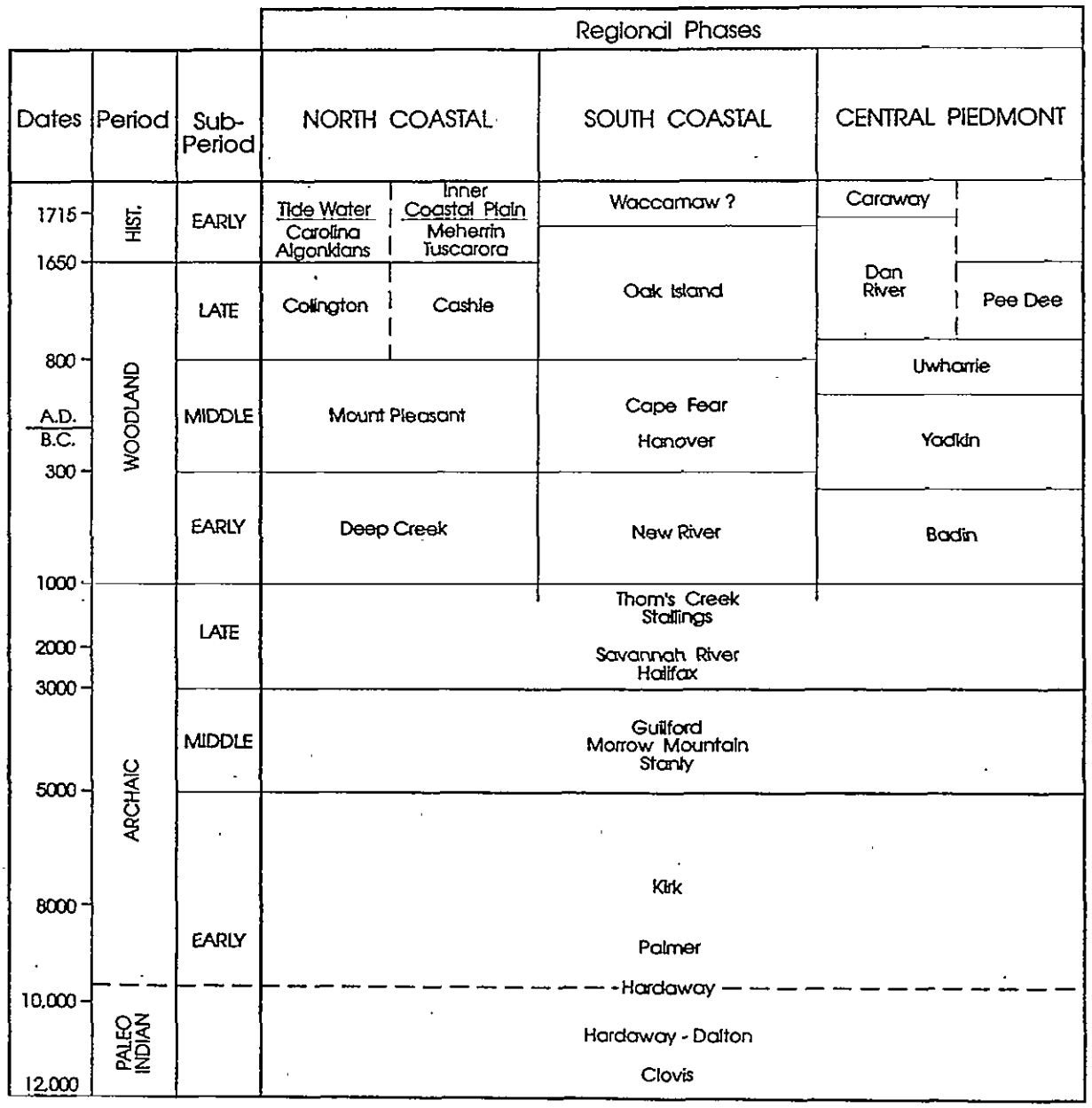

Figure 30. A generalized cultural sequence for eastern North Carolina (partially adapted from Coe 1964:Figure 116 and Phelps 1983:Figure 1.2).

While convincingly argued, this approach is not universally accepted.

The Paleoindian occupation, while widespread, does not appear to have been intensive. Artifacts are most frequently found along major river drainages, which Michie interprets to support the concept of an economy "oriented toward the exploitation of now extinct mega-fauna" (Michie 1977:124). Survey data for Paleoindian tools, most notably fluted points, is rather dated for North Carolina (Brennan 1982; Peck 1988; Perkinson 1971, 1973; cf. Anderson 1990b). In spite of this, the distribution offered by Anderson (1992:Figure 5.1) reveals a rather general, and widespread, occurrence throughout the region. Phelps (1983:21) states that settlement patterning in the North Carolina Coastal Plain is impossible to meaningfully discuss since there have been so few recorded sites, but speculates on the presence of base camps along major streams, with special activity sites in the uplands. An alternative is the model tracking the replacement of a high technology forager (or HTF) adaptation by a "progressively more generalized band/microband foraging adaption" accompanied by increasingly distinct regional traditions (perhaps reflecting movement either along or perhaps even between river drainages) (Anderson 1992b:46).

Distinctive projectile points include lanceolates such as Clovis, Dalton, perhaps the Hardaway, and Big Sandy (Coe 1964; Phelps 1983; Oliver 1985) (Figure 31). A temporal sequence of Paleoindian projectile points was proposed by Williams (1965:24-51), but according to Phelps (1983:18) there is little stratigraphic or chronometric evidence for it. While this is certainly true, a number of authors, such as Anderson (1992a) and Oliver (1985) have assembled impressive data sets. We are inclined to believe that while often not conclusively proven by stratigraphic excavations (and such proof may be an unreasonable expectation), there is a large body of circumstantial evidence. The weight of this evidence tends to provide considerable support.

Unfortunately, relatively little is known about Paleoindian subsistence strategies, settlement systems, or social organization (see, however, Anderson 1992b for an excellent overview and synthesis of what is known). Generally, archaeologists agree that the Paleoindian groups were at a band level of society (see Service 1966), were nomadic, and were both hunters and foragers. While population density, based on isolated finds, is thought to have been low, Walthall suggests that toward the end of the period, "there was an increase in population density and in territoriality and that a number of new resource areas were beginning to be exploited" (Walthall 1980:30).

According to Braley (1990:5) there are a modest number of late Paleoindian sites on Fort Bragg. Of the 196 sites that Loftfield (1979) found which produced diagnostic points, only 26 contained Hardaway, Palmer, or Big Sandy artifacts. Abbott et al. (1995:8) also identified several Paleoindian points from contexts in the near vicinity of Fort Bragg.

Archaic Period

The Archaic Period, which dates from 10,000 to 3,000 B.P.[3], does not form a sharp break

[3] The terminal point for the Archaic is no clearer than that for the Paleoindian and many researchers suggest a terminal date of 4,000 B.P. rather than 3,000 B.P. There is also the question of whether ceramics, such as the fiber-tempered Stallings ware, will be included as Archaic, or will be included with the Woodland. Oliver, for example, argues that the inclusion of ceramics with Late Archaic attributes "complicates and confuses classification and interpretation needlessly" (Oliver 1981:20). He comments that according to the original definition of the Archaic, it "represents a preceramic horizon" and that "the presence of ceramics provides a convenient marker for separation of the Archaic and Woodland periods (Oliver 1981:21). Others would counter that such an approach ignores cultural continuity and forces an artificial, and perhaps unrealistic, separation. Sassaman and Anderson (1994:38-44), for example, include Stallings and Thom's Creek wares in their discussion of "Late Archaic Pottery." While this issue has been of considerable importance along the Carolina and Georgia coasts, it has never affected the Piedmont, which seems to have embraced pottery far later, well into the conventional Woodland period. The importance of the issue in the Sandhills, unfortunately, is not well known.

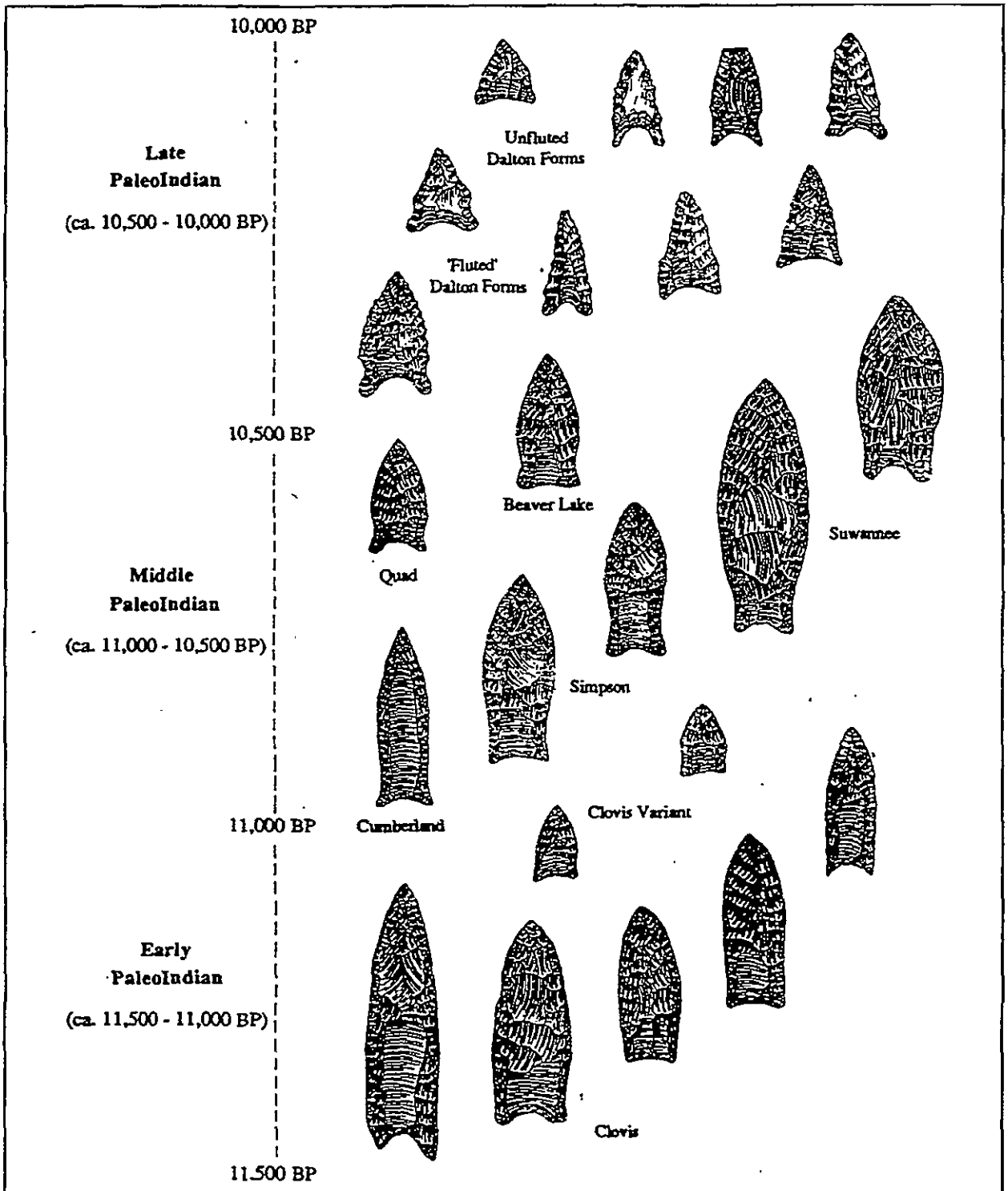

Figure 31. Diagnostic Paleoindian project points and suggested chronology for Georgia and the Carolinas (adapted from Anderson 1992a:Figure 3.1).

with the Paleoindian Period, but is a slow transition characterized by a modern climate and an increase in the diversity of material culture. Associated with this is a reliance on a broad spectrum of small mammals, although the white tailed deer was likely the most commonly exploited animal. Archaic period assemblages, exemplified by corner-notched and broad-stemmed projectile points (Figure 32), are fairly common, perhaps because the swamps and drainages offered especially attractive ecotones.

Loftfield's (1979:54) data suggests that there was a noticeable population increase from the Paleoindian (with five identified components in his study) into the Early Archaic (where at least 42 components were isolated). This corresponds with findings by other researchers (see, for example, Ward 1983:65). This has tentatively been associated with a greater emphasis on foraging. Diagnostic Early Archaic artifacts include the Kirk Corner Notched point. As previously discussed, Palmer points may be included with either the Paleoindian or Archaic period, depending on theoretical perspective. As the climate became hotter and drier than the previous Paleoindian period, resulting in vegetational changes, it also affected settlement patterning as evidenced by a long-term Kirk phase midden deposit at the Hardaway site (Coe 1964:60). This is believed to have been the result of a change in subsistence strategies.

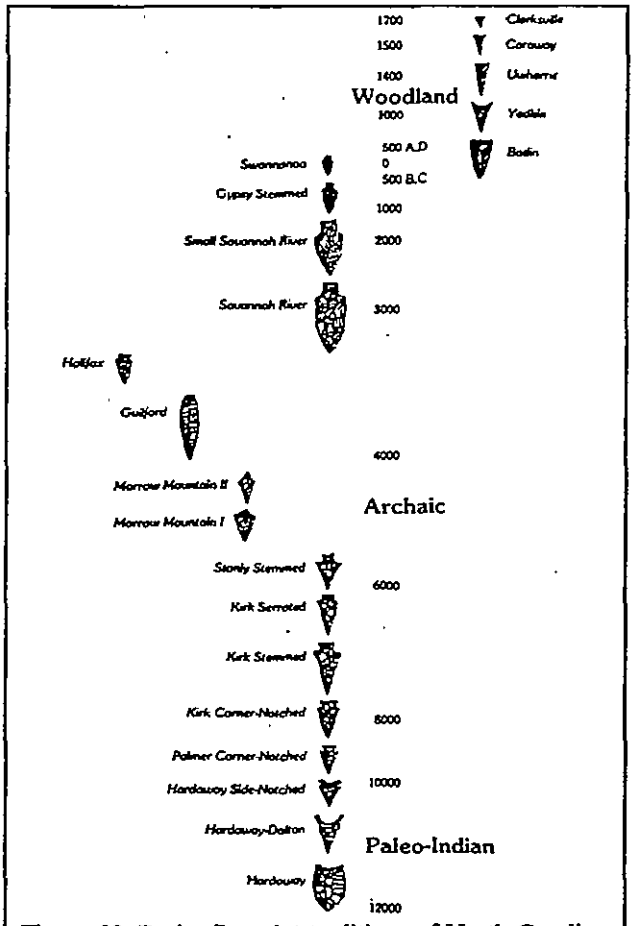

Figure 32. Projectile point traditions of North Carolina (adapted from Oliver 1985:Figure 10-8).

Settlements during the Early Archaic suggest the presence of a few very large, and apparently intensively occupied, sites which can best be considered base camps. Hardaway might be one such site. In addition, there were numerous small sites which produce only a few artifacts — these are the "network of tracks" mentioned by Ward (1983:65). The base camps produce a wide range of artifact types and raw materials which has suggested to many researchers long-term, perhaps seasonal or multi-seasonal, occupation. In contrast, the smaller sites are thought of as special purpose or foraging sites (see Ward 1983:67).

Middle Archaic (8,000 to 6,000 B.P.) diagnostic artifacts include Morrow Mountain, Guilford, Stanly and Halifax projectile points. Middle Archaic diagnostic artifacts were found to occur on 60 of the 196 sites found by Loftfield (1979; see also Braley 1990:7). Phelps (1983:25) also notes that the gradual increase from Paleoindian to Archaic in the Coastal Plain seems to peak during the Middle Archaic Morrow Mountain phase.

Much of our best information on the Middle Archaic comes from sites investigated west of the Appalachian Mountains, such as the work by Jeff Chapman and his students in the Little Tennessee River Valley (for a general overview see Chapman 1977, 1985a, 1985b). There is good evidence that Middle Archaic lithic technologies changed dramatically. End scrapers, at times associated with Paleoindian traditions, are discontinued, raw materials tend to reflect the

greater use of locally available materials, and mortars are initially introduced. Associated with these technological changes there seem to also be some significant cultural modifications. Prepared burials begin to more commonly occur and storage pits are identified. The work at Middle Archaic river valley sites, with their evidence of a diverse floral and faunal subsistence base, seems to stand in stark contrast to Caldwell's Middle Archaic "Old Quartz Industry" of Georgia and the Carolinas, where axes, choppers, and ground and polished stone tools are very rare.

The available information has resulted in a variety of competing settlement models. Some argue for increased sedentism and a reduction of mobility (see Goodyear et al. 1979:111). Ward argues that the most appropriate model is one which includes relatively stable and sedentary hunters and gatherers "primarily adapted to the varied and rich resource base offered by the major alluvial valleys" (Ward 1983:69). While he recognizes the presence of "inter-riverine" sites, he discounts explanations which focus on seasonal rounds, suggesting "alternative explanations . . . [including] a wide range of adaptive responses." Most importantly, he notes that:

> the seasonal transhumance model and the sedentary model are opposite ends of a continuum, and in all likelihood variations on these two themes probably existed in different regions at different times throughout the Archaic period (Ward 1983:69).

Others suggest increased mobility during the Archaic (see Cable 1982), Sassaman (1983) has suggested that the Morrow Mountain phase people had a great deal of residential mobility, based on the variety of environmental zones they are found in and the lack of site diversity. The high level of mobility, coupled with the rapid replacement of these points, may help explain the seemingly large numbers of sites with Middle Archaic assemblages. Curiously, the later Guilford phase sites are not as widely distributed, perhaps suggesting that only certain micro-environments were used (Braley 1990; cf. Ward [1983:68-69] who would likely reject the notion that substantially different environmental zones are, in fact, represented).

Recently Abbott et al. argue for a combination of these models, noting that the almost certain increase in population levels probably resulted in a contraction of local territories. With small territories there would have been significantly greater pressure to successfully exploit the limited resources by more frequent movement of camps. They discount the idea that these territories could have been exploited from a single base camp without horticultural technology. Abbott and his colleagues conclude, "increased residential mobility under such conditions may in fact represent a common stage in the development of sedentism" (Abbott et al. 1995:9).

From excavations at a Sandhills site in Chesterfield County, South Carolina, Gunn and his colleague (Gunn and Wilson 1993) offer an alternative model for Middle Archaic settlement. He accepts that the uplands were desiccated from global warming, but rather than limiting occupation, this environmental change made the area more attractive for residential base camps. Gunn and Wilson suggest that the open, or fringe, habitat of the upland margins would have been attractive to a wide variety of plant and animal species.

Another point of some controversy is the idea that the groups responsible for the Middle Archaic Morrow Mountain and Guilford points were intrusive ("without any background" in Coe's words) into the North Carolina Piedmont, from the west, and were contemporaneous with the groups producing Stanly points (Coe 1964:122-123; Phelps 1983:23). Phelps, building on Coe, refers to the Morrow Mountain and Guilford as the "Western Intrusive horizon." Sassaman (1995) has recently proposed a scenario for the Morrow Mountain groups which would support this west-to-east time-transgressive process. Abbott and his colleagues, perhaps unaware of Sassaman's data, dismiss the concept, commenting that the shear distribution and number of these points "makes this position wholly untenable" (Abbott et al. 1995:9).

The Late Archaic, usually dated from

6,000 to 3,000 or 4,000 B.P., is characterized by the appearance of large, square stemmed Savannah River projectile points (Coe 1964). These people continued to intensively exploit the uplands much like earlier Archaic groups with, in North Carolina, the bulk of our data for this period coming from the Uwharrie region. At Fort Bragg 39 of the 196 sites contained Late Archaic components (Loftfield 1979), suggesting a leveling off, or even slight decline, from the earlier Middle Archaic. While the data must be viewed cautiously, they may provide some support to Phelps' (1983:25) contention that the Archaic population stabilized during the Morrow Mountain phase.

One of the more debated issues of the Late Archaic is the typology of the Savannah River Stemmed and its various diminutive forms. Oliver, refining Coe's (1964) original Savannah River Stemmed type and a small variant from Gaston (South 1959:153-157), developed a complete sequence of stemmed points that decrease uniformly in size through time (Oliver 1981, 1985). Specifically, he sees the progression from Savannah River Stemmed to Small Savannah River Stemmed to Gypsy Stemmed to Swannanoa from about 5000 B.P. to about 1,500 B.P. He also notes that the latter two forms are associated with Woodland pottery.

This reconstruction is still debated with a number of archaeologists expressing concern with what they see as typological overlap and ambiguity. They point to a dearth of radiocarbon dates and good excavation contexts at the same time they express concern with the application of this typology outside the North Carolina Piedmont (see, for a synopsis, Sassaman and Anderson 1990:158-162, 1994:35).

In addition to the presence of Savannah River points, the Late Archaic also witnessed the introduction of steatite vessels (see Coe 1964:112-113; Sassaman 1993), polished and pecked stone artifacts, and grinding stones. Some also include the introduction of fiber-tempered pottery about 4000 B.P. in the Late Archaic (for a discussion see Sassaman and Anderson 1994:38-44). This innovation is of special importance along the Georgia and South Carolina coasts, but seems to have had only minimal impact in North Carolina.

Although fiber-tempered pottery has been known from southeastern North Carolina since at least the late 1950s when it was collected from 31Cb4, it was not formally defined until South's 1960 survey of the coast (South 1976). Initially it was assumed to be limited to the South Carolina border area, but by the early 1970s Phelps was identifying specimens from the Greene County area (Phelps 1983:26). By the 1980s fiber-tempered wares were recognized from at least 38 sites scattered throughout the coastal plain of North Carolina. Phelps notes, however, that only what might be called Stallings Plain is found, suggesting that "the full-fledged ceramic series with its decorative types did not extend into the South Coastal region" (Phelps 1983:26). The pottery is typically associated with Savannah River Stemmed points, steatite pottery or disks, and grooved axes. The significance of the ware declines dramatically northward to the Tar drainage (Phelps 1983:Figure 1.4) and it is partially on this distribution that Phelps bases the development of two regions within the North Carolina coastal plain.

Fiber-tempered pottery has been reported from only two sites on Fort Bragg and only one site has produced Thom's Creek pottery (Braley 1990:9; Loftfield 1979). Robinson (1986:75) mentions that fiber-tempered pottery, while not common, is present and especially singles out 31CD151 as worthy of attention.

There is evidence that during the Late Archaic the climate began to approximate modern climatic conditions. Rainfall increased resulting in a more lush vegetation pattern. The pollen record indicates an increase in pine which reduced the oak-hickory nut masts which previously were so widespread. This change probably affected settlement patterning since nut masts were now more isolated and concentrated. From research in the Savannah River valley near Aiken, South Carolina, Sassaman has found considerable diversity in Late Archaic site types with sites occurring in virtually every upland environmental zone. He suggests that this more complex settlement pattern evolved from an increasingly complex socio-economic system. While it is

unlikely that this model can be simply transferred to the Sandhills of North Carolina without an extensive review of site data and micro-environmental data, it does demonstrate one approach to understanding the transition from Archaic to Woodland.

Woodland Period

As previously discussed, there are those who see the Woodland beginning with the introduction of pottery. Under this scenario the Early Woodland may begin as early as 4,500 B.P. and continued to about 2,300 B.P. Diagnostics would include the small variety of the Late Archaic Savannah River Stemmed point (Oliver 1985) and pottery of the Stallings and Thoms Creek series. These sand tempered Thoms Creek wares are decorated using punctations, jab-and-drag, and incised designs (Trinkley 1976). Also potentially included are Refuge wares, also characterized by sandy paste, but often having only a plain or dentate-stamped surface (Waring 1968). Others would have the Woodland beginning about 3,000 B.P. and perhaps as late as 2,500 B.P. with the introduction of pottery which is cord-marked or fabric-impressed and suggestive of influences from northern cultures.

Regardless, it is between 4,000 and 3,000 B.P. when Phelps (1983:26-27, Figure 1.2) notes that the coastal plain can be divided into a northern and southern region. Our attention will focus on the southern region, along with brief remarks on the adjacent Piedmont.

Along the southern coastal plain a northern-influenced ware which Loftfield (1976:149-154) terms New River is associated with the Early Woodland. Essentially identical to the Deep Creek pottery identified by Phelps (1983:29-31) for the north coastal area, this pottery is tempered with coarse sand making it feel sandy to the touch.[4] The pottery, according to Loftfield may be "thong-marked" (i.e., simple stamped), cord-marked, net-impressed, fabric-impressed, and plain (often smoothed). Phelps suggests subsuming the New River into Deep Creek "in order to standardize typology across the Coastal Plain" (Phelps 1983:31). This has apparently not attracted much support, although frankly neither has the use of Loftfield's New River type. One factor which certainly complicates such efforts is the near total absence of excavation data coupled with good radiocarbon dates (a problem admitted by Phelps [1983:32]). Little is known about possible cultural associations, although there is some limited evidence that at least some of the small variants of the Savannah River Stemmed may be found with Early Woodland materials. For example, Oliver notes the co-occurrence of Gypsy Stemmed points with Swannonoa pottery, dated to about 200 B.C. at the Warren Wilson site (Oliver 1981:185). John Davis reports the association of a Gypsy Stemmed point with Yadkin pottery (although Badin is also reported) radiocarbon dated to between 410 B.C. and A.D. 10 at 31FY549 (Davis 1987:1, 5).[5] The large triangular Roanoke point (South 1959:146-148) is likely also associated with Early Woodland ceramics.

In spite of our near total ignorance of Early Woodland sites, many suggest that the subsistence economy was based primarily on deer hunting and fishing, with supplemental inclusions of small mammals, birds, reptiles, and shellfish. This is based on the continuation of a generalized Late Archaic pattern, which may or may not be

[4] In North Carolina, as in South Carolina, type descriptions tend to be loosely written with attributes poorly defined. To further complicate typological issues, there is almost no petrographic or chemical studies of these wares. Consequently, descriptive references such as "sandy," "coarse," and "fine" are meant only as general statements.

[5] Although very interesting, this feature should be cautiously interpreted since the carbonized material came from a depth of only 4 to 12 cm below the ground surface and Davis notes that the feature was somewhat dispersed by "natural processes." Further, the association of what is reported as both Badin and Yadkin pottery in the same feature may help account for the relatively large radiometric span. Billy Oliver (personal communication 1996), however, reports that another similar feature was also recovered from this site, although it has not been reported.

appropriate.

Further to the west, in the Piedmont, the Early Woodland is marked by a pottery type defined by Coe (1964:27-29) as Badin.[6] This pottery is identified as having very fine sand in the paste with an occasional pebble. Coe identified cord-marked, fabric-marked, net-impressed, and plain surface finishes. Beyond this pottery little more is known about the makers of the Badin wares than is known about those who made New River wares.

Somewhat more information is available for the Middle Woodland, typically given the range of about 2,300 B.P. to 1,200 B.P. The best data concerning Middle Woodland Coastal Zone assemblages comes from Phelps' (1983:32-33) work in the north coastal region and can be only cautiously extended to either the southern coast or the Sandhills. The pottery is his Mount Pleasant series which includes very coarse quartz temper and exhibits fabric-impressed, cord-marked, net-impressed, and plain surface treatments. Associated items include small varieties of the Roanoke Large Triangular points, Yadkin points, sandstone abraders, shell pendants, polished stone gorgets, celts, and woven marsh mats. Significantly, both primary inhumations and cremations are found. It seems to be characterized by a pattern of settlement mobility and short-term occupation. Phelps (1983), for example, notes a decrease in the number of small sites along the smaller tributary streams and an increase in the number of sites along major streams and estuaries. He suggests the presence of seasonal subsistence camps (focused on either coastal shellfish or riverine species further inland) coupled with sedentary villages. The shift in settlement patterns, according to Phelps, may be related "to increased dependence on domesticated plants" (Phelps 1983:35), a conclusion with very little support.

In the southern region the dominant pottery is either the Cape Fear or Hanover wares, although very little is known about the groups which produced these ceramics. The Cape Fear pottery is sand tempered and surface decorations include cord-marked, fabric-marked, net-impressed, and plain. Phelps equates the Cape Fear wares with his Mount Pleasant pottery. He notes that:

> the Cape Fear ceramic types described by South (1976:18) are essentially similar to the Mount Pleasant series and Haag's [1958] "grit-tempered," and both of these have been included in the Mount Pleasant definition to provide a comprehensive ceramic horizon across the Coastal Plain (Phelps 1983:35).

The Hanover pottery is distinguished by clay and sherd temper with some suggestion that the majority of the temper is composed of crushed sherds. The Hanover wares are fabric-impressed, cord-marked, and plain (see South 1976:16-18). Loftfield, rather than accepting South's Hanover type, chose to develop the Carteret Series (Loftfield 1976:154-157). Loftfield also offers a type description for the Onslow Series, a crushed quartz tempered ware with cord-marked and fabric-impressed surfaces. He noted, however, that Onslow pottery was found at only six sites and its chronological position, while placed in a Middle Woodland context between his Carteret and White Oak series, was poorly understood (Loftfield 1976:199). This pottery seems to have some superficial resemblance to the Piedmont Yadkin series (discussed below), but is rarely referred to in publications today.

One of the few distinctive features of the coastal plain (and Sandhills) Middle Woodland[7]

[6] The ceramics suggest clear regional differences during the Woodland which seem to only be magnified during the later phases. Ward (1983:71), for example, notes that there "marked distinctions" between the pottery from the Buggs Island and Gaston Reservoirs and that from the south-central Piedmont.

[7] Their association with the Middle Woodland, in many cases, is tenuous. Phelps, in fact, notes that he places them with his discussion of Cape Fear "because their content and occurrence elsewhere in the eastern Woodlands area" (Phelps 1983:35). There are some good reasons to suggest that they span a greater time period,

appears to be the presence of low sand burial mounds. One of the most thorough overviews is offered by MacCord (1966), although Wilson (1982) offers a fresh review and a detailed assessment of one such mound. Artifacts are typically sparse, consisting of platform pipes, an occasional cord marked, sand-tempered sherd, celts, shell beads, copper beads, and a few triangular projectile points. Human remains include cremations, bundle burials, multiple burials, and flexed burials. The frequency of secondary burials suggest that a number of individuals were interred only after some form of reduction. Further complicating analyses, the human remains are frequently in very poor condition (the probable result of the acid soils and loose sands).

Wilson's (1982) study of the McFayden Mound, Bw°67, is particularly interesting since she was able to roughly calculate the life expectancy of the population — 19.9 years at birth. While this estimate seems low when compared to other prehistoric populations it is close agreement with that found at more Northern ossuaries. It was also possible to reconstruct the population size which is, of course, dependent on the number of years of deaths represented in the mound. Relying on ethnohistoric data, Wilson suggests a population size of around 200 individuals, a seemingly reasonable estimate for Woodland models which might focus on macro-bands.

Some have suggested that this elaboration of burial customs suggests changes in social organization and that it also implies a more sedentary lifestyle. This, in turn, has led to discussions of possible horticultural activities during the Middle Woodland. We concur with Ward's (1983:73) assessment that while there is certainly convincing evidence of horticulture in other regions, there is virtually no evidence of domesticated plant foods in North Carolina before, at the earliest, the Late Woodland.

Moving to the Piedmont the dominant Middle Woodland ceramic type is typically identified as the Yadkin series. Characterized by a crushed quartz temper the pottery includes surface treatments of cord-marked, fabric-marked, and a very few linear check-stamped sherds (Coe 1964:30-32). It is regrettable that several of the seemingly "best" Yadkin sites, such as the Trestle site (31An19) explored by Peter Cooper (Ward 1983:72-73), have never been published.

At Fort Bragg the Middle Woodland period (2,300 B.P. to 1,200 B.P.) is better represented than the earlier Woodland phase. Over 5% of the diagnostic sites produced Yadkin projectile points (Braley 1990). Undifferentiated Woodland artifacts were found at 115 (or 58.7%) of the 196 sites identified by Loftfield (1979) which suggests a great increase either in population or land use in this area (Braley 1990).

In some respects the Late Woodland (1,200 B.P. to 400 B.P.) may be characterized as a continuation of previous Middle Woodland cultural assemblages. While outside the Carolinas there were major cultural changes, such as the continued development and elaboration of agriculture, the Carolina groups settled into a lifeway not appreciably different from that observed for the previous 500-700 years. From the vantage point of the Middle Savannah Valley Sassaman and his colleagues note that, "the Late Woodland is difficult to delineate typologically from its antecedent or from the subsequent Mississippian period" (Sassaman et al. 1990:14). This situation would remain unchanged until the development of the South Appalachian Mississippian complex (see Ferguson 1971).

Phelps would challenge this view, at least for the north coastal region, holding instead that "from A.D. 800 onward archaeological assemblages of the Late Woodland period in the North Coastal region can be related to ethnohistoric information and studies, thus providing the relative comfort of

perhaps into the Late Woodland. Wilson (1982:161-162), for example, presents some relatively strong evidence that at least one mound, Bw°67, may date as late as A.D. 1300. This is supported by the presence of a stone pipe comparable to those of found at Uhwarrie phase sites, the presence of Adam's Creek pottery (possibly proto-historic), and cranial measurements which strongly resemble Piedmont Siouan populations.

social and linguistic identities and the use of the direct historical approach" (Phelps 1983:36). In the north Phelps has done a superb job identifying the Carolina Algonkians (on the coast) and the Tuscarora (on the interior). The Algonkians are associated with the Colington phase and the associated pottery is shell-tempered with fabric-impressed, simple-stamped, plain, and incised surface treatments (Phelps 1983:36, 39-43; see also Gardner 1990; Phelps 1981, 1982, 1984). The inland Tuscarora appear to have been producing the Cashie series pottery, which is tempered with grit and pebbles and has fabric-impressed, simple-stamped, incised, and plain surfaces (Phelps 1983:37-39, 43-47).

For the south coastal region information is considerably less secure and ethnohistoric placement is confounded by a seeming mix of Siouan, Algonkian, and perhaps even Muskhogean linguistic and cultural traits. South offers a brief synopsis of enthohistoric data for the south coast (1976:5-8) and associates these mixed groups with his Oak Island complex, which Phelps (1983) adopts. Loftfield found similar evidence, although he chose to designate the material White Oak (Loftfield 1976:157-163). One of the earliest detailed south coastal studies was Loftfield's examination of the Uniflight site in Onslow County (Loftfield 1978). Loftfield found a late spring/early summer period occupation and went on to suggest a seasonal adaptive cycle for the region which included dispersal to the estuaries. The predominant food remains, according to Loftfield, were shellfish. His excavations also revealed the village, with two houses discernable. They measured about 13 m in length and 6 m in width, with posts placed at 10 to 20 cm centers. Perhaps the best evidence associating the Oak Island wares with a specific ethnic group is the research conducted at a New Hanover County ossuary where the skeletal population was identified as Siouan (Coe et al. 1982).

Phelps (1983:48) notes that Loftfield's work has been concentrated adjacent to the presumed regional border and that additional work is necessary. He also remarks that it seems likely there may be different interior and coastal expressions for the Oak Island phase.

Moving into the Piedmont, the Late Woodland is typically associated with small triangular points such as Uwharrie, Caraway, Pee Dee, and Clarksville (Coe n.d., 1964;49; Oliver 1985; South 1959:144-146). The characteristic pottery is the Uwharrie series, which contains crushed quartz (one characteristic of which is its tendency to protrude through the wall of the pottery). This series included cord-marked and net-impressed surface treatments. The ware was described by Coe in the unpublished Poole site report (Coe n.d.).[8] This pottery appears to represent an evolution from the earlier Yadkin wares (Coe 1995:156). Of equal interest is a radiocarbon date of A.D. 1610, suggesting that this pottery lasted well into the protohistoric. Coe also notes that "Town Creek and other villages situated along the fall line between the Piedmont and the Coastal Plain seem to have formed a southern boundary for the production and use of Uwharrie ware," which he suggests was made by the ancestors of the Sara, Tutelo, Occaneechi, Saponi, and Keyauwee (Coe 1995:158). If this is correct, Uwharrie pottery may be exceedingly rare in the Fort Bragg area.

Unfortunately, excavated sites are as difficult to come by as well published and distributed type descriptions. Results of excavations at one of the more interesting Uwharrie sites, Yd'1 (Coe 1972), have never been published. This site was first explored in 1957, at which time 28 human burials, two dog burials, and 42 features were recovered. In 1972 further work identified 83 features, although no additional burials were encountered. The features were classified as storage pits (with either straight walls and flat bottoms or bell-shaped), hearths, and refuse pits.

Moving from the Late Woodland into the proto-historic period at least some of the clouds surrounding the Piedmont dissipate, largely as the

[8] This study was intended to be published under a monograph series entitled, *University of North Carolina Laboratory of American Archaeology Publications*, but was never completed. The work was conducted in 1936, although the ensuing report is undated.

result of Wilson's (1983) extraordinary efforts to make sense out of nearly 50 years of confusion. There is some considerable evidence that the descendant of the Uwharrie pottery is the Dan River Series (Lewis 1951:242-259; Gardner 1980:54-55; Wilson 1983:249-267, 270-277, 282-296). One of the more interesting conclusions of Wilson's work is that:

> the pottery from the Catawba River during the Late Prehistoric period is markedly different from that of the Dan River region. Bowl forms, surface finishes and decorations differ significantly between the two areas. The presence of burnished and complicated stamped surfaces, cazuella and hemispherical bowl forms, the use of circular reed punctations to create "pseudo-nodes," and applique rim strips, all illustrate the direct influence that emanated from the Pee Dee, and Pee Dee related, culture (cf. Reid 1965, 1967) of the Wateree River in South Carolina, and the Little River section of the Pee Dee River in south-central North Carolina. . . . An attempt to incorporate these foreign modes of surface finish, vessel shape and decoration, similar to that illustrated in the 31Id31 material, is not evidenced at this early date in the Dan River assemblage. The differences between the Dan River and the Catawba River collections in the placement of decorations, the decorative elements that occur, and the association of these designs with vessel forms and surface finish, underscores this interaction dichotomy (Wilson 1983:315).

Curiously, South (1972) makes a somewhat similar observation for the coastal plain linguistic groups, noting considerable cultural attributes cross-cutting the historic Muskhogean and Siouan linguistic boundary. Archaeology at the Payne site in neighboring Moore County also found evidence of possible interaction between Pee Dee and Siouan cultures. Both Pee Dee and Uwharrie pottery were found at the site, possibly suggesting an intrusion of the South Appalachian Mississippian into this otherwise seemingly Siouan village. Further work at such border sites may help explain the introduction and use of corn by Siouan groups as well as the acquisition of a carved paddle stamped pottery tradition (Mountjoy 1989:19-20).

Widmer (1975) and Loftfield (1979) have suggested that settlement patterns on the Inner Coastal Plain did not change from the Archaic period onward, because it was believed that the nutrient deficient soils were not well suited for agriculture. Braley (1989) found, however, that the Late Woodland period sites at Fort Bragg do exhibit differences from the earlier period since there were more Woodland sites than any other type and because there were minor, but statistically significant differences in the sizes of upland and lowland Woodland sites. Although agriculture may not have been a significant aspect of Late Woodland life, the populations appear to have become more sedentary and the lowland, river-oriented terrain took on greater importance (Braley 1990:12).

South Appalachian Mississippian

The Pee Dee culture was defined through the excavations of Joffre Coe at Town Creek which is located about 65 km west of Fort Bragg (Coe 1995; Reid 1967). The site, generally accepted to represent a northern intrusion of a Mississippian chiefdom, was originally dated from about A.D. 1550 to 1750, although more recent analyses suggests a date more likely between A.D. 900 and 1400 (Coe 1995:159).

Braley (1990) indicates that Pee Dee ceramics, which are typically diagnostic of the Mississippian period, are lacking at Fort Bragg. The lack of Pee Dee ceramics suggest that the prehistoric or proto-historic societies of the Fort Bragg area were relatively unaffected by these cultural events (Braley 1990:12). It is also possible that areas which would typically contain large

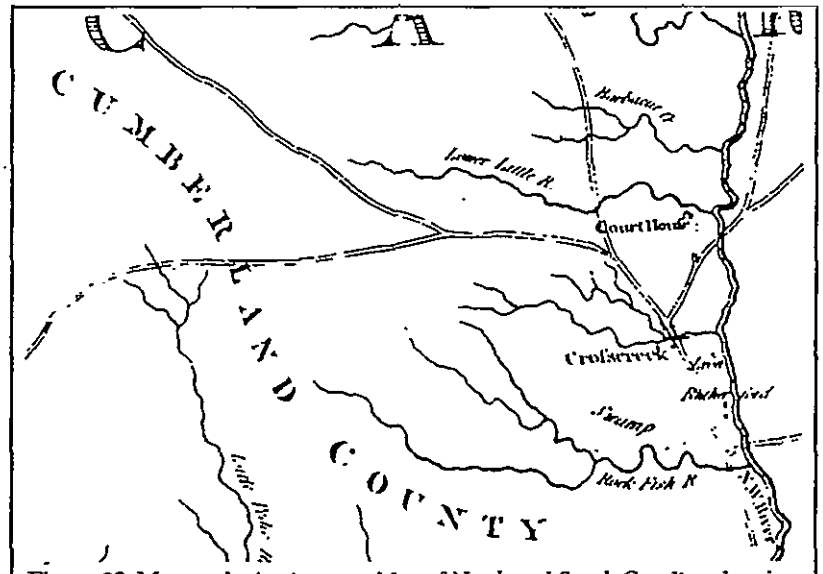

Figure 33. Mouzon's *An Accurate Map of North and South Carolina* showing the Fort Bragg area in 1775.

The only river navigable by sea-going ships was the Cape Fear, but it was not utilized until the 1720s. This was primarily due to two reasons: the Tuscarora Indians which occupied the region were not subdued until about 1715 and during the 1710s pirates controlled the Cape Fear and used it as a base of operations (Rankin 1989; Schonhorn 1972:137). Two cities developed in the 1720s at the mouth of the Cape Fear (Brunswick and Wilmington) which helped to provide a viable transportation and distribution network. By 1724, the land office for the Cape Fear region opened and settlement began to take place along the river. By the 1730s Scottish Highlanders began to

Mississippian sites were not examined by Loftfield to any degree. Large river terraces associated with the Lower Little River may not have contained many fire breaks or other exposures to provide easy discovery. It is possible that future work in these areas will provide evidence for Mississippian occupation.

Historic Overview

It was nearly a century after the failure of the Roanoke Island colony in the 1580s before a permanent, effective settlement of North Carolina was begun. The colonization of North Carolina was not well promoted by the English due to its shoreline being inaccessible. They, therefore, turned their attention toward Charleston and the Chesapeake region. As a result, North Carolina settlers most often came over land by way of other colonies such as South Carolina, Virginia, and Pennsylvania (Meyer 1961:69-71). These settlers were described as the "dregs and gleanings of all the other English Colonies" (McCusker and Menard 1986:170).

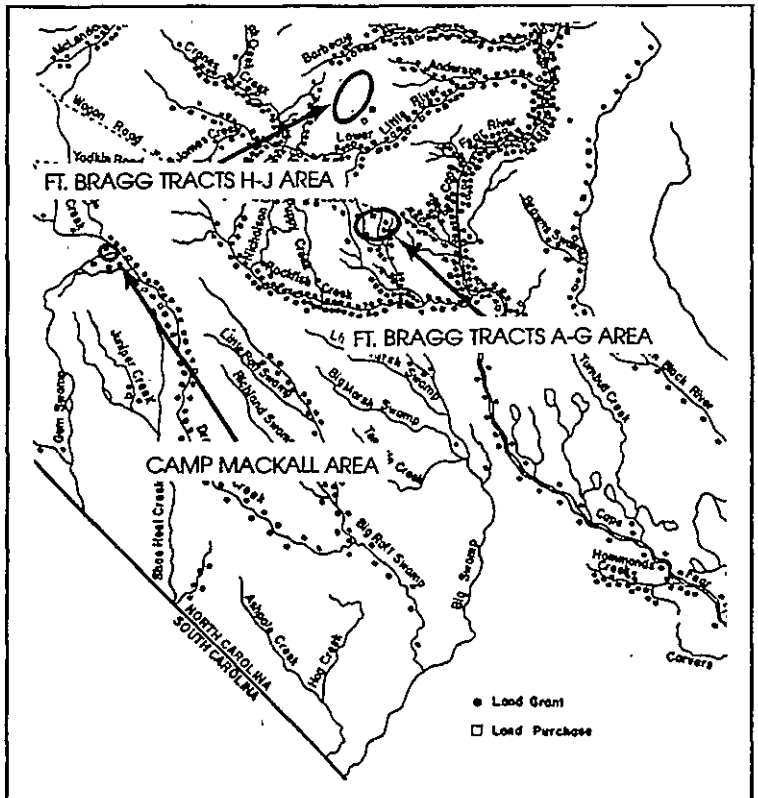

Figure 34. Land grants and purchases obtained by Highlanders in the project areas between 1733 and 1775 (adapted from Meyer 1961:Map VIII).

settle the Cape Fear region near present day Fayetteville (Meyer 1961:71-72).

Lefler and Newsome (1973) state that there were a number of Ulster Scots (or Scotch-Irish) who also settled the area although it appears that the bulk of their grants and purchases were in present day Sampson and Duplin counties. Other Ulster Scot settlements were on the Yadkin, Catawba, and Eno rivers. Oates (1972:14) states that there was an Irish colony on the upper Northeast Cape Fear in 1736, but does not provide details.

It is interesting to note that the Highlander culture was so dominant and persistent in the area that in 1828 a tourist noted that the post office had to hire a clerk who could speak both English and Gaelic (Ross 1965:300). Oates (1972:621) notes that even up to the Civil War era that there were a few surviving Gaelic speaking inhabitants. The Longstreet Church cemetery, located about 4 km southeast of the survey tract "J" contains at least one antebellum epitaph in Gaelic (Kern and Boyko 1996; Ross 1965:300).

One thorough exploration of the importance of British folkways in the development of the American culture is Hacket's (1989) *Albion's Seed* in which he explores the four principal migrations. While the Highland Scots is not one of these, his brief comments are worth repeating:

> another colonial culture developed in North Carolina's Cape Fear Valley, where Highland Scots began to arrive circa 1732. Many followed after the '45 Rebellion, and by 1776 their numbers were nearly as large as the white population in the South Carolina low country. Other ethnic groups also settled in the Cape Fear Valley, but so dominant were highlanders that Gaelic came to be spoken in this region even by people who were not Scots. . . . Even in the twentieth century, the Cape Fear people sent to Scotland for ministers, who were required to wear the kilt, play the pipes, and preach in Gaelic.
>
> The political history of the culture was very different from its border neighbors. During the American Revolution the borderers were mostly Whigs; Scottish highlanders were mainly Tory. In the new republic, the backsettlers tended to vote Democratic-Republican, and the highlanders of the Cape Fear Valley voted Federalist. Historian Duane Meyer writes that these people were "remarkedly consistent in choosing the losing side." They never became part of the solid south; in 1900 they cast their ballots for McKinley rather than Bryan. Here was another culture that preserved its separate identity into the twentieth century (Hacket 1989:818-819).

During the early period settlement grew up along the rivers and creeks. The community of Argyle grew up along an early road which closely follows the alignment of modern-day Longstreet Road. However, road-oriented settlement was unusual since much of the sandy upland soils were unsuitable for productive farming. According to Hudson (1984:53) the Blaney-Gilead-Lakeland soil association which dominates the north half of Hoke County is not classified by the U.S. Department of Agriculture as prime farmland.[9] These soils are also not listed as being state or locally important farmland, which means while not prime farmland, they are suited to producing crops economically only when managed according to modern farming methods (Hudson 1984:53). It seems likely that the Argyle community

[9] Prime farmland is defined as containing soils that, "are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have qualities that are favorable for the economic production of sustained high yields of crops" (Hudson 1984:53).

was more of a mercantile district.

Cumberland County, which incorporated portions of present day Hoke County, was established in 1754 (Corbitt 1950). The first settlement took place near the mouth of Cross Creek and by 1760 the settlement was formally set apart (Figure 17). In 1762 the town of Campbelltown was established near the Cross Creek settlement, and in 1778 the two towns were combined. In 1783 the name was changed to Fayetteville (Lefler and Powell 1973:92). The town is situated on the west bank of the Cape Fear River at the head of its navigable point. Wilmington is 192 km by water, making Fayetteville's position, both in relation to Wilmington and to the interior, valuable during the early historic period.

During the early half of the eighteenth century, settlement in the area was primarily along the Cape Fear river, but as these areas became populated settlement began to occur on the larger streams. Land grants and purchases secured by Highlanders between 1733 and 1775 are illustrated in Figure 18, showing that by the end of the colonial period the area was well settled, at least along the waterways.

The large, vast tracts of long leaf pine spurred on the production of naval stores during the colonial period. These forest resources also led the people of the Cape Fear region to produce items such as lumber, barrels, and other wood products. Crops included corn, rice and other grains. In addition, livestock were raised to supplement the income of the people (Lefler and Powell 1973:93; see also Hill 1983, and McLean and Sellon 1978).

The growth and expansion of the backcountry during the Proprietary period after 1750 created a number of problems including the creation of new counties and equal representation in the legislature. The backcountry citizens complained bitterly about eastern domination since planter aristocracy in the east dominated the control of the provincial government. The unit of representation was the county and there were far more counties in the east than in the rapidly growing west. As population increased in the backcountry, the legislature created more counties in the west, but also created additional counties in the east to guarantee that control would not be lost to the back country. There were nine boroughs in the state and only two of these (Salisbury and Hillsborough) were in the Piedmont. The rest (Bath, Brunswick, Edenton, New Bern, Campbelltown, Halifax, and Wilmington) were in the east. Tension between east and west mounted in 1766 by the passage of an act to establish a permanent capital. The new capital was an eastern borough — New Bern (Lefler and Powell 1973:223-224).

Out of this tension grew a backcountry movement known as the Regulator movement. This name was adopted because their main goal was to obtain the right to regulate their own government. A number of incidents occurred including attacks on court officials in Anson and Johnston counties, and disorders in Rowan and Edgecombe counties. This movement was interrupted by the American Revolution and its aftermath (Lefler and Newsome 1973:236-239).

Cross Creek did see some minor action during the war. Governor Martin, who had previously fled his office due to lack of British military support, worked out a plan for the British conquest of North Carolina. Martin was to raise approximately 9,000 Loyalists. Lord Cornwallis was to sail from Ireland with seven regiments of British regulars and take command of both groups which were to combine in the Wilmington-Brunswick area by mid-February of 1776. In January of that year the plan was approved. On January 10, Governor Martin issued a proclamation asking all loyal subjects to "unite and suppress the rebellion" in North Carolina. In mid-February 1,600 Highlanders led by Donald McDonald were assembled at their rendezvous at Cross Creek and then began their march toward Wilmington. Colonel James Moore, who directed the Whig forces, was determined to keep the enemy from reaching the port. A secondary objective was to take possession of Cross Creek. To achieve these goals, Moore marched his forces to Elizabeth Town; Colonel Alexander Lillington and Colonel James Ashe were ordered to reinforce Caswell and

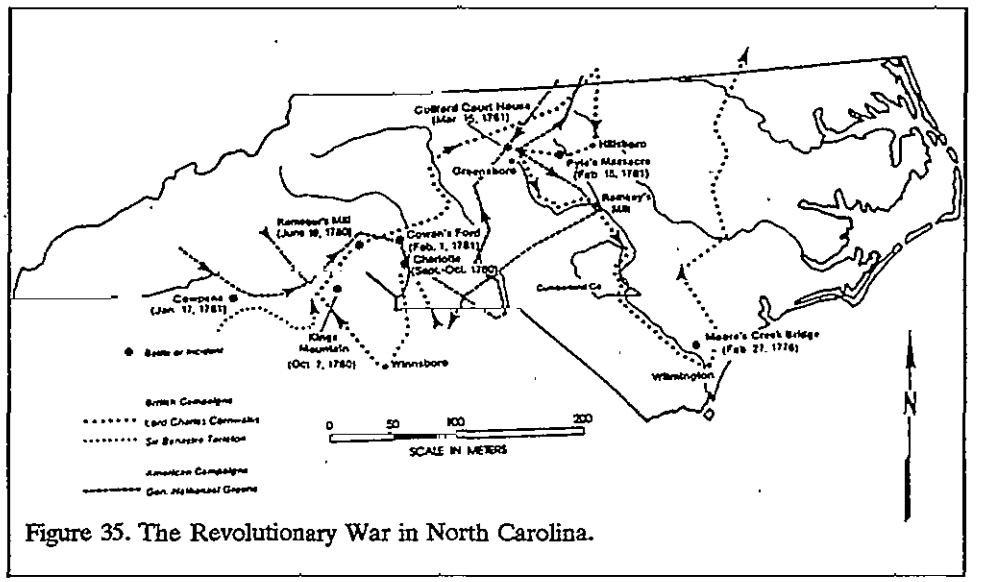

Figure 35. The Revolutionary War in North Carolina.

secure Moore's Creek Bridge, 29 km north of Wilmington since the Loyalists would have to cross this bridge to reach Wilmington (Figure 35).

The Whig forces reached the bridge before the Loyalists and set a number of traps which made crossing the bridge difficult and added confusion to the ranks. For three minutes the Loyalists were swarmed with swan-shot and musket fire. Soon the battle was over with an overwhelming Whig victory (Lefler and Powell 1973:275-278).

Two events which directly affected the Fort Bragg reservation occurred in 1781 as Lord Cornwallis retreated through Cumberland County on his way to Wilmington from Guilford Courthouse, and when the conflicting loyalties of local Whigs and Tories resulted in the Piney Bottom Massacre.

As Cornwallis was being pursued by Colonel Henry Lee he passed along the edge of Fort Bragg along the Lower Little River. Having no provisions left, the soldiers began to forage the area of Cumberland County. Cornwallis and his troops crossed into what is now Fort Bragg at Monroe's Bridge. While his troops continued on their way, local tradition has it that Cornwallis diverged from the group and headed to Malcolm Smith's house in the Argyle area on present day Longstreet Road where he visited (Nye n.d.:16-21). Unfortunately, this visit is based primarily on local lore.

The Piney Bottom Massacre occurred on August 4, 1781 as a result of a surprise attack on the Whigs by local Tories led by John McNeill (Nye n.d.:22-26). Seven men were killed, one was wounded, and a number of houses were pillaged or burned. Nye (n.d.) locates the massacre site where Morganton Road crosses Piney Bottom Creek although Wicker (1966) disputes this location since Morganton Road was not in place until 1794. He suggests that the massacre occurred nearer to what is today Holland Drop Zone.

The war left North Carolina in a bad situation. It was in debt, its money was worthless, and its English markets were lost. Most of the state's population led a simple, low-level economic existence which made the effects of the war more acute than in surrounding, richer states. Gradually export trade reached a new high. New England replaced Britain as the major customer for goods. Major exports included corn, lumber, and tobacco. Population steadily increased after the war. Census reports from 1790 to 1820 gave the population as 393,751; 478,103; and 638,829 (Lefler and Newsome 1973:2660270).

During the antebellum period there was a remarkable increase in the state's two major cash crops—tobacco and cotton. Agricultural expansion and prosperity were partly due to a systematic movement to improve farming methods and rural life which resulted in the publication of journals such as the *Carolina Cultivator* and *North Carolina Planter* (Lefler and Newsome 1973:390-392). In 1840 the county's products were listed as 6,037

bushels of wheat, 16,577 bushels of oats, 3,019 bushels of rye, 291,630 bushels of corn, 459,747 pounds of cotton, 16,800 pounds of wool, 1,794 barrels of turpentine, and 78,540 dollars worth of lumber (Wheeler 1925:124).

As expressed in the quantity of turpentine and lumber listed above, naval stores were important to the area economy. North Carolina ranked number one as the world's foremost producer of naval stores from 1720 to 1870 (Lefler and Newsome 1973:97). The longleaf pine, which was plentiful in the study area, was the basic resource needed for the industry. Many farmers would produce naval stores during slow agricultural seasons or in bad weather and operations ranged from small to large. On large operations, labor was organized on the task system, much like that found at the Carolina rice plantations.

Frederick Law Olmsted passed through this area on a stage coach road from Raleigh to Fayetteville in 1853. His account of the terrain was precise, like that of an environmental surveyor:

> the road was a mere opening through a forest of the long-leafed pine; the trees from eight to eighteen inches in diameter, with straight trunks bare for nearly thirty feet, and their evergreen foliage forming a dense dark canopy at that height, the surface of the ground undulating with long swells, occasionally low and wet. In the latter case there was generally a mingling of deciduous trees and a watercourse crossing the road, with a thicket of shrubs. The soil sandy, with occasionally veins of clay; the latter more commonly in the low ground, or in the descent to it. Very little grass, herbage, or underwood; and the ground covered, except in the road, with fallen pine-leaves. Every tree, on one, two, or three sides, was scarified for turpentine. In ten miles, I passed half a dozen cabins, one or two small clearings, in which corn had been planted, and one turpentine distillery (Olmsted 1953:138).

His observations concerning many of the region's people were no less sharp:

> The negroes employed in the turpentine business, to which during the last week I have been giving some examination, seem to me to be unusually intelligent and cheerful, decidedly more so than most of the white people inhabiting the turpentine forest. Among the latter there is a large number, I should think a majority, of entirely uneducated, poverty-stricken vagabonds. . . . They are poor, having almost no property but their own bodies; and the use of these, that is, their labour, they are not accustomed to hire out statedly and regularly, so as to obtain capital by wages, but only occasionally by day or job, when driven to it by necessity. A family of these people will commonly hire, or "squat" and build, a little log cabin, so made that it is only a shelter from the rain, the sides not being chinked, and having no more furniture or pretension to comfort than is commonly provided a criminal in the cell of a prison. They will cultivate a little corn, and possibly a few rows of potatoes, cow-peas, and coleworts. They will own a few swine, that find their living in the forest (Olmsted 1953:146-147).

What he described as North Carolina's "proverbial reputation for the ignorance and torpidity of her people" he attributed to "the general poverty of the soil in the eastern part of the state," certainly a reference to the Sandhills and Inner Coastal Plain (Olmsted 1953:148).

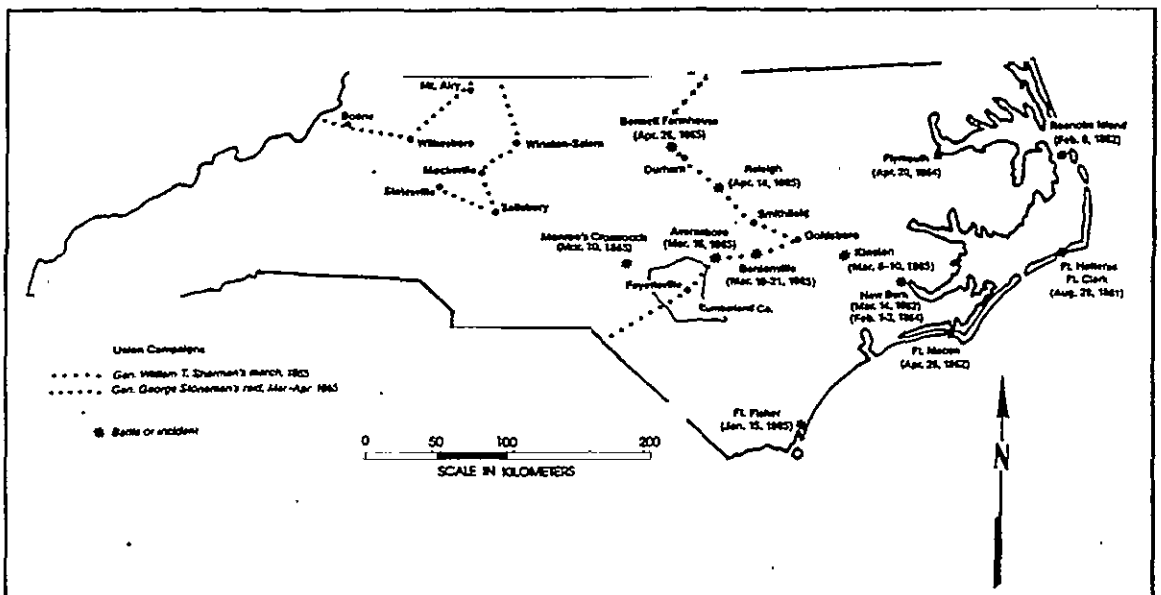

Figure 36. The Civil War in North Carolina.

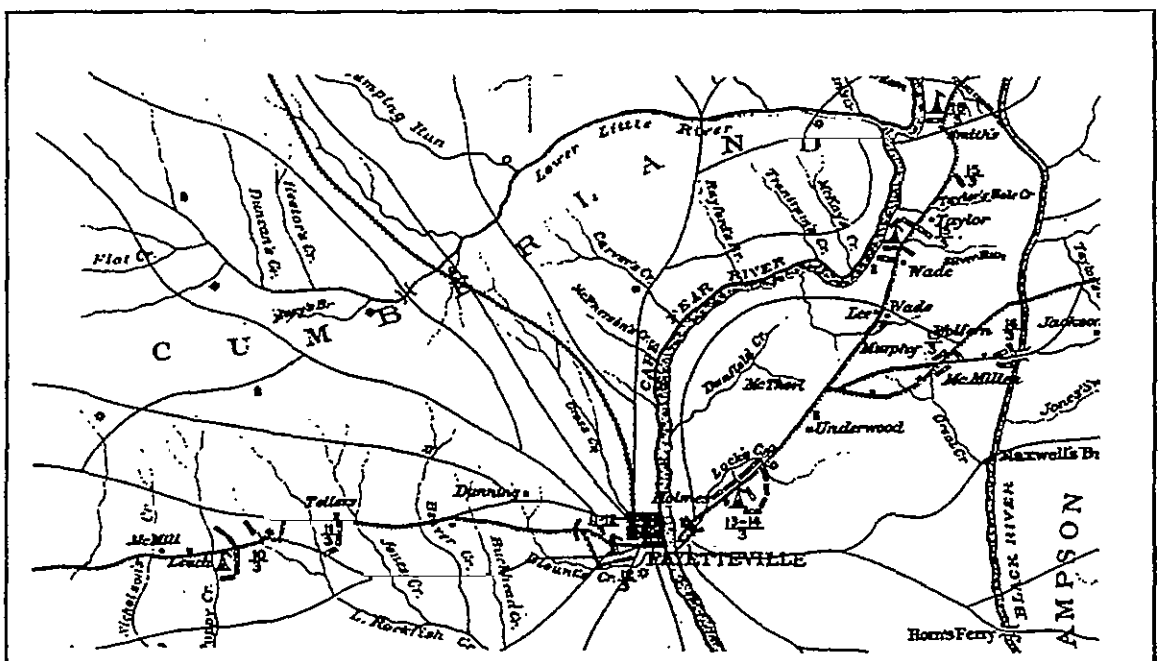

Figure 37. Vicinity of Fayetteville and Fort Bragg in March 1865 (adapted from *Atlas to Accompany the Official Records of the Union and Confederate Armies*, Plate LXXX, Number 8).

Cumberland County experienced a slow population growth. In 1790 there were 8,671 inhabitants including 6,407 whites, 2,181 slaves, and 83 free blacks. The greatest jump in population occurred between 1810 and 1820 when the population grew from 9,385 to 14,446 with a 29% increase in the white population, an 83% increase in the free black population, and 41% increase in the slave population. This increase is probably due to the expansion and prosperity of agriculture. However, given the poor soils found in the Fort Bragg area, this population growth probably occurred elsewhere in the county, perhaps closer to Fayetteville.

There was an increase in manufacturing establishments during the antebellum as well. From 1850 to 1860 these establishments increased from 2,663 to 3,689. In 1860 Cumberland County had 84 turpentine distilleries, seven cotton mills, and three iron works (Lefler and Newsome 1973:397-398). Although notable economic advances had occurred in the state after 1840, North Carolina was still relatively poor by the time of the Civil War. It was rural and isolated, and its coast was dangerous and without a good port (Lefler and Newsome 1973:402). Cumberland County's population in 1850 was 12,447 whites, 7,217 slaves; and 946 freedmen (Wheeler 1925:124).

The only military action to take place in the project area during the Civil War was during General William T. Sherman's march in 1865. While Sherman's army was moving north from Savannah to meet Grant's army in Virginia, they passed through Fayetteville (Figure 36), destroying the Confederate Arsenal on March 11. Constructed between 1836 and 1859, this was one of the South's most important military depots (Barrett 1963:311-317; Grunden et al. 1995:15; Lefler and Newsome 1973:459).

Immediately affecting the Fort Bragg reservation was the Battle of Monroe's Crossroads about 4 km west of the study area. A skirmish occurred early on March 10, 1865 when a surprise attack by Confederate forces, under the command of General Wade Hampton, was made on Charles Monroe's house, the temporary headquarters of Brigadier-General H. Judson Kilpatrick. (Barrett 1963:301-317; Guernsey and Alden 1977:720 [1866]; Nye n.d.:42-61). The battle took place in an area encompassing two plantations or farms — Rocky Mount and Green Springs. Although the attack initially favored the Confederates, the Federal troops rallied and retook the camp. Perhaps most importantly, by this time the war was already lost and the battle is little more than a footnote in the tragic conflict.

Immediately after the war, cotton prices peaked, causing many Southerners to plant cotton using free labor, in the hope of recouping losses from the war. The hiring of freedmen began immediately, with variable results. They began with a wage labor system established by the Freedmen's Bureau. Gradually owners turned away from wage labor contracts to two kinds of tenancy — sharecropping and renting. While very different, both succeeded in making land ownership very difficult, if not impossible, for the vast majority of Blacks. Sharecropping required the tenant to pay his landlord part of the crop produced, while renting required that he pay a fixed rent in either crops or money (Orser 1988).

Smith provides a description of the poor soils found in the Sandhills region:

> In the midst of the large bodies of sand-hill lands there are occasional tracts of a fair grade of cultivatable land, generally found on or near the water courses. The sand-hill soils proper will produce almost nothing; they furnish, however, a scant pasturage in the swampy tracts which abound along the sluggish streams. The yaupon and the scuppernong grape flourish even in these sand wastes (Smith 1880:548).

Although the county's population grew up through the twentieth century, the poverty of the Sandhills soil deterred any large scale settlement of areas away from creeks and rivers. Smith (1880) describes the location of cultivable lands. He states that the rivers and creeks have wide areas of

bottom lands:

> or are flanked by swamps or oak and pine flats, and on these are made crops of corn, potatoes and rice. Cotton is grown on the better class of uplands of mixed oaks and pines, which are interspersed among the sandy tracts. The forests are open and park-like . . . . In the midst of the large bodies of sand-hill lands there are occasional tracts of a fair grade of cultivatable land, generally found on or near the water courses (Smith 1880:548).

By the turn of the century, Cumberland County's population had increased to 14,952 whites and 12,369 blacks with a total population of 27,321 (State Board of Agriculture 1986:328). The town of Fayetteville grew rapidly after the introduction of a Norfolk and Southern railway line connecting Fayetteville to Raleigh in 1911, paralleling the history of many Southern communities (Lefler and Newsome 1973:586). It was in this year that Hoke County was created out of portions of Cumberland and Robeson counties (Corbitt 1950:124).

The military base at Fort Bragg near Fayetteville was established in 1918 as a field artillery training center. Covering around 60,000 ha, largely in Cumberland and Hoke counties, and named for General Braxton Bragg, Confederate corps commander, it was the largest military reservation in the United States. The land was purchased primarily because it was cheap since the soils were poor. For all the reasons that farmers were uninterested in the area and willing to sell, government officials were interested. In 1922 it became a permanent Army post, and in the 1940s it was described as having:

> a complete system of municipal and recreations facilities, a chapel, and a school for children; the buildings are modern, built of brick and stucco. The post organization is made up of four regiments of field artillery with latest equipment. A field artillery board tests experimental matérial on the firing range. Pope Field, the Air Corps station, is garrisoned by Flight C, 16th Observation Squadron, and the Second Balloon Squadron. The landing field has a mile-long runway.
>
> In summer the Reserve Officers Training Corps comes to Fort Bragg for training, units of the North Carolina National Guard encamp for two weeks, and the Citizens Military Training Camp is conducted. Since the establishment of the Civilian Conservation Corps in 1932, Fort Bragg has been headquarters of District A (Federal Writers' Project 1988:326).

In 1952 the 1st Special Operations Command was established and Fort Bragg became the Headquarters for Special Forces, Rangers, and Civil Affairs and Psychological Operations. It is also the home of 18th Airborne Corps, the largest corps in the world, as well as the home of the 20th Engineering Brigade, the 16th Military Police Brigade, the 18th Field Artillery Brigade, the 35th Signal Brigade, the 52nd Military Intelligence Group, and the 1st Corps Support Command (*Charlotte Observer*, May 20, 1984). Fort Bragg has become the largest camp of its kind in the nation, leading to tremendous growth of the surrounding region.

Camp Mackall's military history is somewhat more recent. The post was established in April 1943 when over 26,000 ha of property was transferred from the Secretary of the Interior to the Secretary of War for the purpose of training airborne combat units. The cantonment at Camp Mackall, which included an airfield and nearly 2,000 structures, was used by the 11th, 17th, 101st, and 13th Airborne Divisions until the end of the Second World War.

At the end of the war much of the

transferred land was returned to the Secretary of the Interior or the State of North Carolina. Camp Mackall, however, continued to be held by the military and, with the coming of the Vietnam War, a Special Forces training facility was developed at Mackall. Today the facility is still used by Special Forces and the airfield is used for Army rotary wing, Air Force airlift, Low Altitude Parachute Extraction System, and airmobile training.

RESEARCH STRATEGY AND METHODS

Research Goals

The primary goals of this survey were to identify, record, and assess the significance of archaeological sites within the 29.57 ha Camp Mackall Special Forces Training Areas survey tract and within the 713.13 ha Fort Bragg general survey tract. As stated earlier, this work is being done in order to fulfill compliance with the National Historic Preservation Act (Public Law 89-665, as amended by Public Law 96-515) Guidelines for Federal Agency Responsibilities, under Section 110 of the National Historic Preservation Act, Army Regulation AR 420-40, and 36CFR800 (Protection of Historic and Cultural Properties).

Preservation efforts offer important economic, tourism, and education opportunities (see, for example, Rypkema 1990). Yet, understandably these are of little consequence to a government agency whose mission statement is national defense. Clearly, in such a case, the motivation is compliance with law. In spite of this, preservation offers intangible benefits, such as external benefits to society, which are worthy of careful consideration. U.S. Representative John Lewis from Georgia has remarked that, "it is not enough to learn from history or a movie, we must make sure that these precious pieces of our history are preserved." Knowing and understanding our past, many have argued, creates better citizens and hence a better society.[1] Citizens take greater pride in their city's, county's, and country's historical achievements. This pride naturally boosts morale and enhances civic participation. Native American and African American groups can rightly take pride in the expression of their unique ways of life, their history, and their contribution to our Nation. Exploration of our past reveals the heights of which humanity is capable. The study supplies continual inspiration and promise. The exploration of the past makes it possible to keep on seeing, thinking, and reflecting afresh — and this freshness and willingness to explore the past is essential to the democratic process. Exploration of the past may offer social commentary by providing new insights into past lives, or how society reacted to past pressures. It may even help us to better understand the failures of past.

It is also important that a country which has so strongly advocated educational improvement and reform should also understand the irreplaceable role that historic and prehistoric resources can play in teaching us about our heritage. It is essential that the next generation of citizens understand the stories hidden within our archaeological sites and in our historic churches, houses, factories, and communities. The ability to reach out and touch the past, forming a strong and clear link between yesterday and today, offers an unforgettable understanding of another way of life and helps our children better understand the fabric of life in our country. By exploring and emphasizing African American and Native American history it is possible to strengthen the understanding that our heritage is the combined history and culture of all of our citizens.

Oftentimes historic preservation, through the exploration of the past, may challenge rather than reassure, and provoke rather than sooth. Archaeological research, in many ways, offers much more than history ever can since history is largely written by the well educated, the wealthy, and the white. History tends to ignore the poor, the underclass, the illiterate, making them invisible people. History is what others want us to know, archaeology offers the opportunity to explore the reality of the past without the filter of subjectivity

[1] One of the earliest discussions of preservation for patriotic reasons is Charles B. Hosmer, Jr.'s *Presence of the Past*, a history of preservation in America up to 1926. He reveals that long before even the Civil War, America's need to create a national identity manifested itself in efforts to preserve historic sites.

added by some, perhaps many, historical accounts. Archaeology offers the potential to explore the lives of African American slaves that are largely known only through the dry history of white slave-owner account books and plantation diaries. While slave owners were concerned with how many acres a slave could hoe, or how much they had to be fed, the owner was rarely interested in how slaves lived, died, ate, or made their house a home. Likewise, our understanding of Native American groups in the historic period is dominated by traders and occasional visitors who had clear reasons for coloring their accounts. Archaeology offers the only opportunity for better understanding the reality of the past.

Part of this reality is also the understanding that history is not made up of single events, or great people, or unique ideas alone. As Tony Wrenn and Elizabeth Mulloy explained nearly two decades ago:

> Events are only punctuation marks; the process itself is history. It takes days and days of irritation and heat and insult, and grievance to provoke a revolution. A bicentennial commemorates 200 years — not just the years on either side of a hyphen (Wrenn and Mulloy 1976:15).

History is fluid and on-going. It involves both the great and the small. Archaeological studies help us better understand both the continuum and also the importance of the common person.

Many also point out that historic preservation is a "merit good" — simply because preservation is an important part of life, its perpetuation and dissemination merits government support. Like food, shelter, and education, some feel that everyone should be entitled to a minimum quantity and standard of historic preservation experience, whether that be exposure to historically significant buildings, a better understanding of past industrial technology, or the ability to explore Native Americans who lived thousands of years ago. The government allows preservation efforts to be available and emphasizes their importance by support of preservation on government facilities and land.

Inherent in the understanding of merit good is the realization that, without subsidy, the cost of historic preservation is too high relative to most consumer's incomes. In other words, were it not for government intervention it is unlikely that much of the educational aspects of preservation would widely exist or be available for the public benefit. Only the wealthy would be able to afford private preservation "experiences." It follows that there is an intrinsic wrong in making our history available to only the richest 20% of the population, who are likely to represent a very biased cross-section of our society.

However, in addition to the legally mandated goals of this study, we identified and incorporated a range of secondary goals which reflect an effort to address at least some of the issues identified as important to the discipline. These included both methodological issues, whose answers will help to better and more cost-effectively undertake survey and preservation efforts, and research issues, whose answers will help to better explore and refine our understanding of the past. The secondary goals of this survey included:

- the examination of changing prehistoric land use;
- the affects of clear-cutting and long-term exposure on archaeological sites;
- the effectiveness of 30 m interval transects at locating significant resources;
- changing lithic material preferences; and
- site function/duration based on artifact content.

No major analytical hypotheses were created prior

to the field work and data analysis, although certain expectations regarding the secondary goals will be outlined in these discussions. The research design proposed for this study is, as discussed by Goodyear et al. (1979:2), fundamentally explorative and explicative.

As stated above, the primary goals of this survey were to identify, record, and assess the significance of archaeological sites within the survey tract. The latter aspect involves the sites' eligibility for inclusion on the National Register of Historic Places, although Chicora Foundation only provides an opinion of National Register eligibility and the final determination is made by the lead compliance agency, the United States Army, in consultation with the State Historic Preservation Officer at the North Carolina Department of Cultural Resources.

The criteria for eligibility for the National Register of Historic Places is described by 36CFR60.4 and states that:

> [t]he quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> a. that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b. that are associated with the lives of persons significant in our past; or
>
> c. that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> d. that have yielded, or may be likely to yield, information important in prehistory or history.

It is generally accepted that "the significance of an archaeological site is based on the potential of the site to contribute to the scientific or humanistic understanding of the past" (Bense et al. 1986:60). Butler suggests that the only valid measurement of significance must be based on what he calls the "theoretical and substantive knowledge of the discipline" at any particular moment in time (Butler 1987:821). While the use of this approach over that developed by Glassow[2] (1977) has been suggested, Butler himself acknowledges, "we cannot foresee future research questions, and we may not possess the theory to interpret and understand all that is present" (Butler 1987:822). At this point in time it seems essential to recognize the importance of asking the right questions at the right sites, not limiting the number of sites at which questions are asked, or what questions are posed. Clearly, asking "right questions" at the "right sites" can be difficult and requires an understanding of the "theoretical and substantive knowledge of the discipline" (Trinkley

[2] Glassow's (1977) approach to evaluating site eligibility is through the use of five properties: site integrity, site clarity, artifactual variety, artifactual quantity, and site environmental context. These qualities stress properties of the archaeological record. *Integrity* refers to the degree of preservation or amount of in situ remains present at a site. It relates to the condition and amount of archaeological artifacts, ecofacts, and features found at a site. *Clarity* indicates how well the strata or subsurface features may be distinguished. *Variety* refers to the qualitative variability in the archaeological remains found at a particular site. *Quantity* refers to the frequency or density of the artifacts or subsurface remains and it is in many ways one of the easiest properties to evaluate (although it is certainly not the most important). The last criterion, *environmental context*, refers to unusual environmental features or zonation which might be important in distinguishing sites or site types.

1990:30-31).

National Register Bulletin 36 (Townsend et al. 1993) provides an evaluative process that contains five steps for forming a clearly defined explicit rationale for either the site's eligibility or lack of eligibility. Briefly, these steps are:

- identification of the site's data sets or categories of archaeological information such as ceramics, lithics, subsistence remains, architectural remains, or sub-surface features;
- identification of the historic context applicable to the site, providing a framework for the evaluative process;
- identification of the important research questions the site *might* be able to address, given the data sets and the context;
- evaluation of the site's archaeological integrity to ensure that the data sets were sufficiently well preserved to address the research questions; and
- identification of "important" research questions among all of those which might be asked and answered at the site.

This approach, of course, has been developed for use documenting eligibility of sites being actually nominated to the National Register of Historic Places where the evaluative process must stand alone, with relatively little reference to other documentation and where typically only one site is being considered.

In the case of a survey which identifies multiple sites the process outlined by Townsend et al. (1993) can become burdensome. Consequently, this study has elected to combine some of the steps, making the process more streamlined, without substantively altering the goal to ensure that sites capable of providing significant information are provided the protection afforded in the historic preservation process. The development of a context was not undertaken for each site, but is found outlined in the prehistoric and historic overview section of this report. The identification of "important" research goals is discussed below, outlining significant research issues such as those identified for the coastal region of North Carolina (Phelps 1983).

Otherwise, the evaluative process was essentially the same as outlined by Townsend et al. (1993). Data sets and integrity are discussed, and reference is made to the possibility of erosion and subsequent deflation that may occur as a result of logging operations within these survey areas. It has been determined in other studies (Trinkley et al. 1996a, 1996b) that on sites where erosion/deflation has occurred that the integrity of these sites and other data sets (such as subsurface features) that might have been present are often destroyed. Reference to the prehistoric context is made (when diagnostic material was found) as well as research issues that the site might be able to address.

In his synthesis of prehistoric archaeology of the Coastal Plain, Phelps (1983) listed some of the most important issues regarding the cultural history of the area. While certainly not exhaustive, they are used to help determine which sites identified in the survey are important to a better understanding of the local prehistory. Phelps (1983:50) states that these issues include:

> (1) knowledge of Paleo-Indian period site distribution correlated with Pleistocene environment, which would result in settlement and subsistence models to be tested against those currently proposed;
>
> (2) discovery and excavation of either single-component or stratified Paleo-Indian and Archaic period sites to provide more accurate

descriptions of assemblages for each phase and to assay diachronic changes in the assemblages as well as changes in subsistence strategies and other cultural subsystems;

(3) location and excavation of sites that have preserved the transition from the Late Archaic to the Early Woodland to evaluate the impact of new technology introduced in the latter period;

(4) a study of changes in settlement and subsistence patterns during the Early and Middle Woodland periods in order to understand changes resulting from the introduction of cultigens; and

(5) excavation of sites that represent the range of types for each phase of the regional sequences to provide a complete culture history as a platform from which processual studies can be launched (Phelps 1983:50).

Although these issues are rather broad, they provide a good deal of latitude for framing more specific questions. These issues are discussed in greater detail in the Prehistoric Overview section of this report, but it is appropriate to briefly outline a few of the issues raised by Phelps.

His first and second research topics involve the dearth of information available concerning the Paleoindian Period along the North Carolina coast. Associated legitimate questions might include, what constitutes a Paleoindian site? This, of course, raises the question of where the line is drawn either to incorporate Hardaway and Palmer as terminal phases of the Paleoindian or to include them with Archaic traditions. The answer, of course, cannot come solely from typological studies and arguments, but must incorporate the identification and study of both stratified and even single component sites. The study must include the integrated exploration of both the soils and palynological records. Questions are raised concerning the types of landforms and microenvironmental areas in which Paleoindian sites are most likely to occur. Can the distribution of sites help us refine our understanding of Paleoindian subsistence and their use of different habitats? Additional questions are legitimately raised concerning the differing dates suggested for early sites. It is unfortunate that sites like Hardaway were destroyed before appropriate dating could be undertaken, but there are certainly other sites which may contain suitable proveniences and materials. How do the materials from the Sandhills compare, typologically, to those from the Coastal Plain or Piedmont? Is it possible to distinguish differences which might suggest the extent of different settlement systems?

His third question poses the concern of how Late Archaic Savannah River Stemmed point users became Early Woodland Badin or Deep Creek/New River pottery makers. While obviously early, well-dated sites producing Stallings or Thom's Creek pottery would be ideal, the investigation of virtually *any* Early Woodland ceramic site in the North Carolina Sandhills or on the state's Inner Coastal Plain would be exceptional, especially if it were then published. The research goal also should be interpreted to include questioning how the size of Savannah River points seems to have so consistently declined in size. Can stratified sites showing this change be identified? Ranging off from these initial questions, there are a whole series of especially significant issues. Perhaps one of the most intriguing is how the Middle and Late Archaic evolved into the Early and Middle Woodland. What were the processes, both internal and external, which caused this change and how significant was the change on the daily lives of the Native Americans?

This feeds into Phelps' fourth question concerning cultigens. While his question is phrased to support the assumption that cultigens were present in Early Woodland, it seems that there is little evidence for such a statement anywhere in North Carolina. Therefore, one of the most important research goals might involve a

rededication of efforts to seek out floral and faunal remains for intensive study. If they are present, what was their source — introduction from outside the region or internal development of "weedy" plants? What is their context and date? What was the impact of these horticultural efforts, if they existed? Did they cause any real change in the lifeways of the Woodland peoples?

Phelps' final research goal is simple — sites, and lots of them, need to be examined in order to understand the range of diversity present. Sites in the lower Piedmont, sites in the Sandhills, sites in the Inner Coastal Plain, and sites in the Lower Coastal Plain need to be explored to understand the impact of both topography and the environment.

We realize that this lays out a tremendous range of questions. Some of them will likely be unanswerable, at least with our current level of understanding and expertise. And some may perhaps never be answered, lost in the fog of time behind the clouded glass. Yet too often the very asking of questions is ridiculed. While good for a little controversy and a quick laugh at a colleague's expense, such attitudes do nothing to promote the growth of archaeology and they do even less to help the public understand their heritage. Questions, even those which at first appear unanswerable, need to be asked. Without questions research can become little more than the blind acquisition of data.

One of the secondary goals we outline was to examine changing prehistoric land use. The CZR survey (Loftfield 1979) found that sites are commonly located on hill tops, toe slopes, upland flat areas, and saddle-like settings. The majority of sites were within 100 m of a water source on sandy soils. However, no attempt was made to determine land use through time. Braley (1990) has made some general statements regarding land use based on Loftfield's (1979) study as well as his study of the Northern Training Area (Braley 1989) (see also Braley 1990:3-13). These changes are discussed in the Prehistoric Overview section of this report.

Since it is likely that at least some portions of the Camp Mackall Special Forces Training Area survey tract, as well as other portions of the Fort Bragg general survey tracts have been and will be clear cut, thus exposed, there exists the possibility to explore the process and affect of erosion/deflation at known archaeological sites. Questions concerning what effect this will have on a sites' ability to address significant research questions, and therefore their eligibility for the National Register of Historic Places, may be answered. The information recovered during the present survey allows the establishment of a base line for further studies.

Another goal was to determine the ability of 30 m interval shovel test transects to locate all of the archaeological resources on a given tract. Since very few of the survey areas are exposed, theoretically speaking, it provided us with data that may be used in comparison to previous surveys where surface visibility was excellent. This data may assist in defining issues concerning the ability to identify and spatially define sites that have been recovered through traditional survey methods.

Since the study area is thought to contain a large quantity of prehistoric lithic sites, analysis was geared toward determining lithic resource preference changes through time. Both quartz river cobbles and metavolcanic materials were locally available, although river cobbles could be obtained within the boundaries of Fort Bragg and metavolcanics were known to outcrop as close as 16 km away (North Carolina Department of Conservation and Development 1958).

Another goal was to determine site function/duration based on artifact content. Sassaman et al. (1990) have suggested that examining the tool to debitage ratio can provide functional information about a site. For instance, a low tool-debitage ratio will reflect either "locations of intensive lithic tool production, or locations where tools or cores were modified but not discarded" (Sassaman et al. 1990:224). A high tool-debitage ratio correspond to "relatively intensively utilized locations (e.g. field stations) away from bases and/or sources of lithic raw material" (Sassaman et al. 1990:224). Artifact density is also a method of examining site function

since it reflects the "relative intensity of material discard at a site. By extension, the amount of discard is assumed to be proportional to the cumulative duration of site occupation and/or the total number of site occupants, and/or the intensity of activities from which discarded debris was generated" (Sassaman et al. 1990:223). Diversity of the assemblage can also measure the length of occupation since the discard rate of curated items (such as hafted bifaces, pots, atlatls, etc.) is so low that all classes of artifacts will only be found together at sites with long occupational histories (Sassaman et al. 1990:224). This length of occupation can also be measured by the number of components present (Sassaman et al. 1990).

All of these (tool/debitage ratio, artifact density, and artifact diversity) are tools to examine the nature of an archaeological site in terms of function and duration of occupation. While Sassaman et al. (1990) recommend looking at large subsurface data sets, examining the materials from the project areas, which were typically all gathered from the surface using the methods previously described, may provide a reference point for framing future research questions.

Archival Research

These investigations incorporated a review of the site files at the North Carolina Office of State Archaeology. No previously recorded archaeological sites were recorded within the survey boundaries of the Camp Mackall Special Forces Training Area survey tract by Loftfield (1979) as part of a reconnaissance level survey of Fort Bragg, Camp Mackall, and Simmons Airfield. Only one site was previously recorded within the survey boundaries of the Fort Bragg general survey tracts. This site (31CD106**) was previously recorded by Jameson (1986) in area "C". No other previously recorded archaeological sites were found in any of the other survey tracts on Fort Bragg proper. According to Fort Bragg's historic preservation plan (Braley 1990) no standing structures exist on the tracts and the nearest structure or site listed on the National Register of Historic Places is Long Street Church (ca. 1845) which is located approximately 5 km southwest of survey tract "J". Another notable site is Monroe's Crossroads which was located about 12 km southwest of survey tract "J". Here a skirmish between Wheeler's cavalry and a detachment of General Sherman's troops under the command of General H. Judson Kilpatrick occurred at the end of the Civil War in March of 1865 (Loftfield 1979:27). At Monroe's Crossroads were two plantations: Rocky Mount and Green Springs. Loftfield (1979:28) recommended that this area receive further study for possible National Register nomination (see the **Prehistoric and Historic Overview** section of this report).

Field Survey

As is often the case in field investigations, some boundaries of the survey tracts were difficult to locate in the field or were somewhat nebulous. Even 7.5' USGS topographic maps fail to show all the detail and complexity of land forms. Added to this is the nature of a landscape actively used by the military. Consequently, project boundaries were driven with the base archaeologist, Mr. Wayne Boyko. This was particularly important in survey tracts "H", "I", and "J", where some of the boundaries were not determined by firebreaks and access roads.

As specified by the North Carolina Office of State Archaeology, an archaeological site is defined as six or more artifacts in a 20 m area or any two consecutive positive shovel tests. An isolated occurrence consists of six or less artifacts. Archaeological sites and occurrences were assigned state site numbers.

Subsurface testing, for the purpose of boundary definitions, was to consist of testing along cardinal directions at 10 m intervals on sites less than 50 m across and 20 m on larger sites.

While typically, survey tracts are divided into high, medium, and low archaeological probability zones, Loftfield's (1979) study revealed that Camp Mackall had a high density of prehistoric archaeological resources (17 sites per km^2) compared to other areas of Fort Bragg. For instance, the estimated prehistoric site density for all of Fort Bragg is 10 sites per km^2 (Braley 1990:22). Although the high density in areas of

Camp Mackall is likely a result of large areas being clear cut and left exposed, the survey tract south of the Camp Mackall cantonment area lacked surface visibility. Thus, the work order issued by the National Park Service specified that the entire survey area was considered high probability.

Although all survey tracts within the Fort Bragg general survey were wooded, certain tracts were considered high probability whereas others were considered low probability. Specifically, those tracts within the Fort Bragg cantonment area were considered low probability. Those tracts located outside of the Fort Bragg cantonment area were considered as high probability.

The scope of work specified that low probability surveys include transects and shovel tests spaced at 50 m intervals across the tract. High probability surveys included transects and shovel tests spaced at 30 m intervals across the tract. All areas were to be shovel tested except areas of standing water or with 15% or greater slope.

Shovel tests, which were typically 30 cm by 30 cm or greater, were to be excavated to subsoil or if subsoil could not be identified to the maximum depth achievable with a shovel (about 75 cm). Minimally, shovel tests were excavated to about 30 cm below surface. As will be discussed, in most cases this represented either the extent of remaining A horizon soil or actual penetration into the C horizon subsoils. The fill was to be screened through 0.62 cm mesh hardware cloth and soil stratigraphy was to be recorded on positive shovel tests.

Survey transects were plotted and numbered on project field maps (Figures 38 through 40) and transect logs were kept indicating if a shovel test was excavated or if the area was surface collected. A total of 536 transects were traversed and a total of 4,981 shovel test stations (shovel tests/surface survey) were used. Of the 4,981 shovel test stations 1,725 (or 53%) consisted of shovel tests and the remaining 3,256 were surface surveyed.

As the site maps in the following report section are examined, it will become obvious that on occasion a positive surface collection station will appear to be located *outside* of the site boundaries. While this may at first appear to be an error in the location of site boundaries, it is not. When required, each surface collection station was based on the transect grid. These were used to form a 30 m grid collection square. In order to refine boundaries as much as possible, the materials from these areas were not randomly collected. Instead, the grid square was walked and the artifacts were flagged. This allowed site boundaries to be drawn on the basis of where in the collection area artifacts were actually found. This means that while the actual center point of the collection station may be shown "outside" the site boundaries, if you draw a 30 meter square around the center point, the portion within the drawn site boundaries actually produced artifacts. The rest of the collection area did not contain artifacts and was therefore excluded from the site. The goal here, of course, was to as much as possible replicate the precision offered by multiple shovel tests.

As specified by the North Carolina Office of State Archaeology, an archaeological *site* is defined as six or more artifacts in a 20 m area or any two consecutive positive shovel tests. An isolated *occurrence* (which is also assigned a site number) consists of five or less artifacts. Subsurface testing for the purpose of boundary definitions was to consist of grid pattern testing, typically along cardinal directions at 10 m intervals on sites less than 50 m across and 20 m on larger sites. A rough determination of site size, typically based on the distribution of surface artifacts, was made before closer interval testing based on findings from the 30 m or 50 m transects.

Shovel tests were to be excavated until two consecutive negative tests were encountered around each positive test. The last shovel test in the sequence containing archaeological materials was to constitute a boundary. At the Camp Mackall Special Forces Training Area survey tract there is a case (31RH287*) where no subsurface remains were encountered during routine shovel testing. Initially the boundaries were defined by the extent of surface remains. Eventually the site

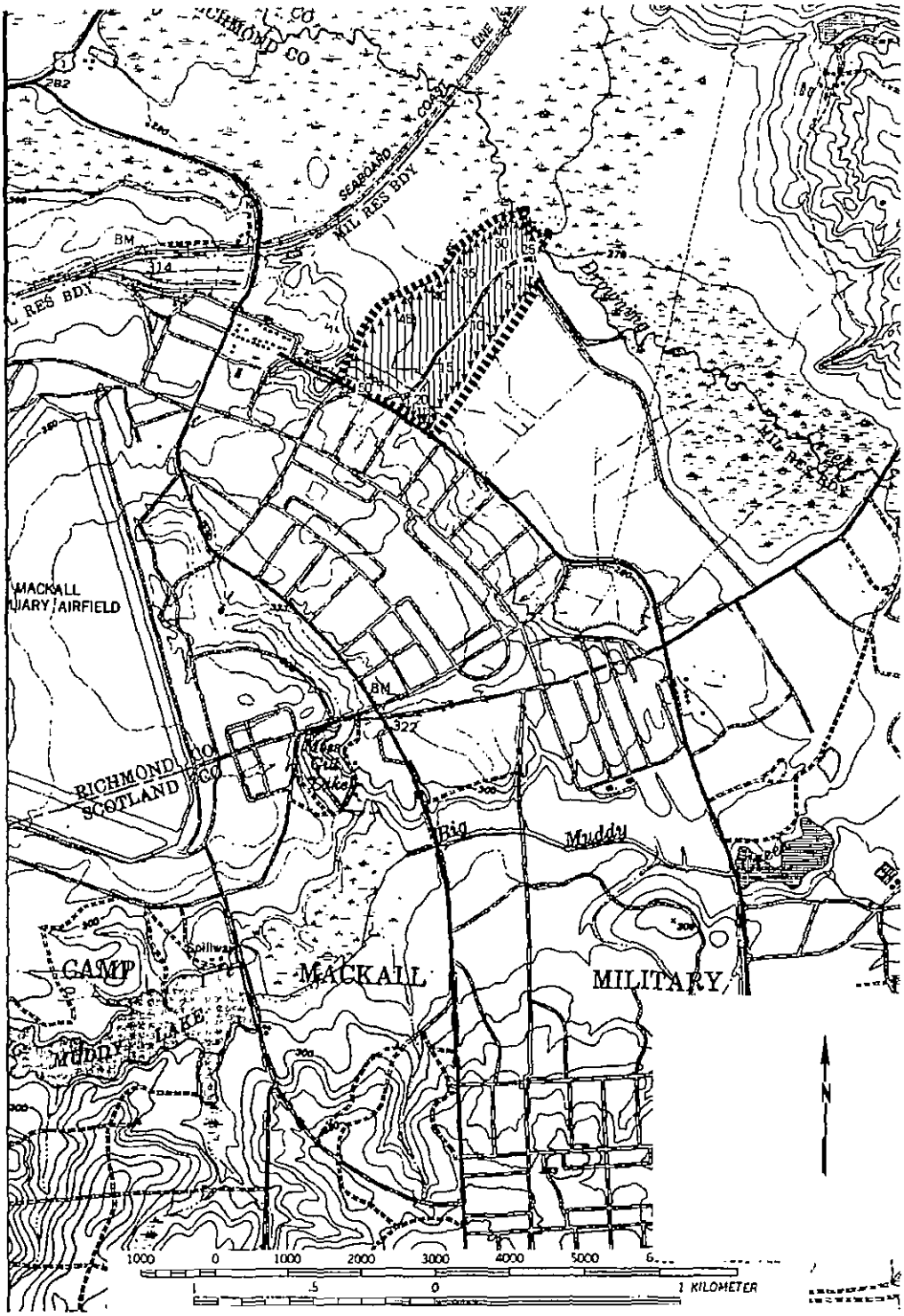

Figure 38. Survey transects at Camp Mackall Special Forces Training Area survey tract.

Figure 39. Survey transects at Fort Bragg general survey tract "A".

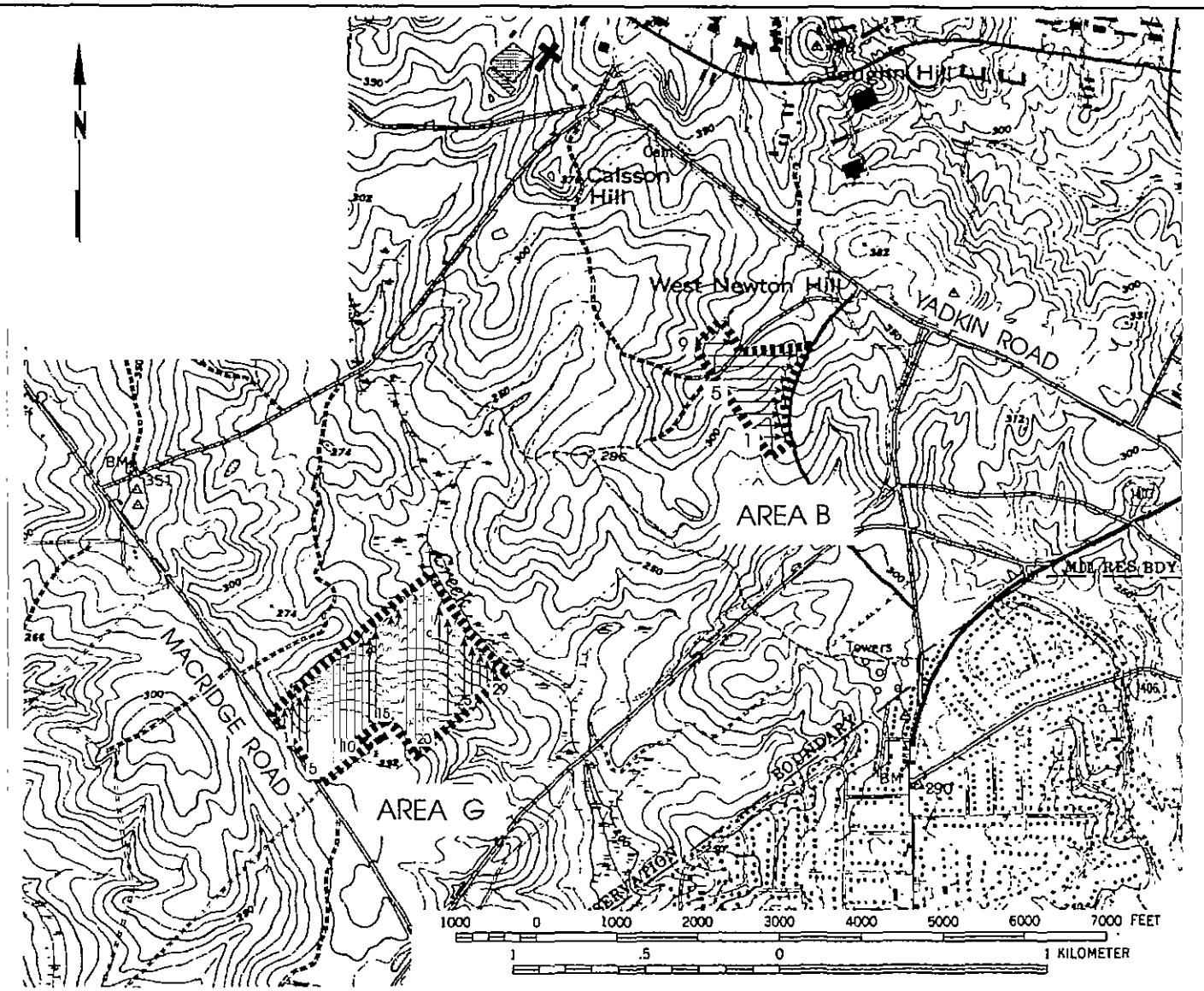

Figure 40. Survey transects at Fort Bragg general survey tracts "B" and "G".

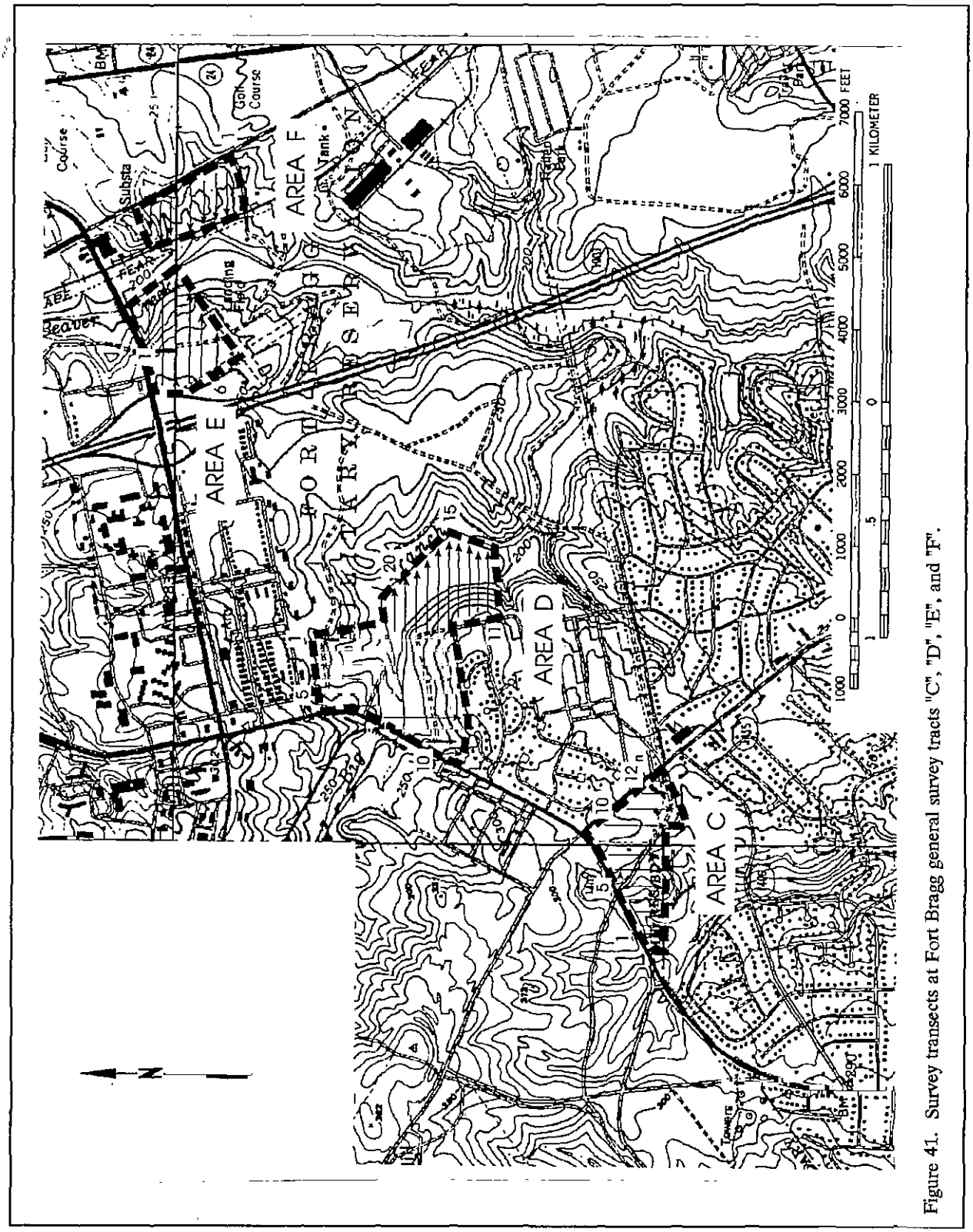

Figure 41. Survey transects at Fort Bragg general survey tracts "C", "D", "E", and "F".

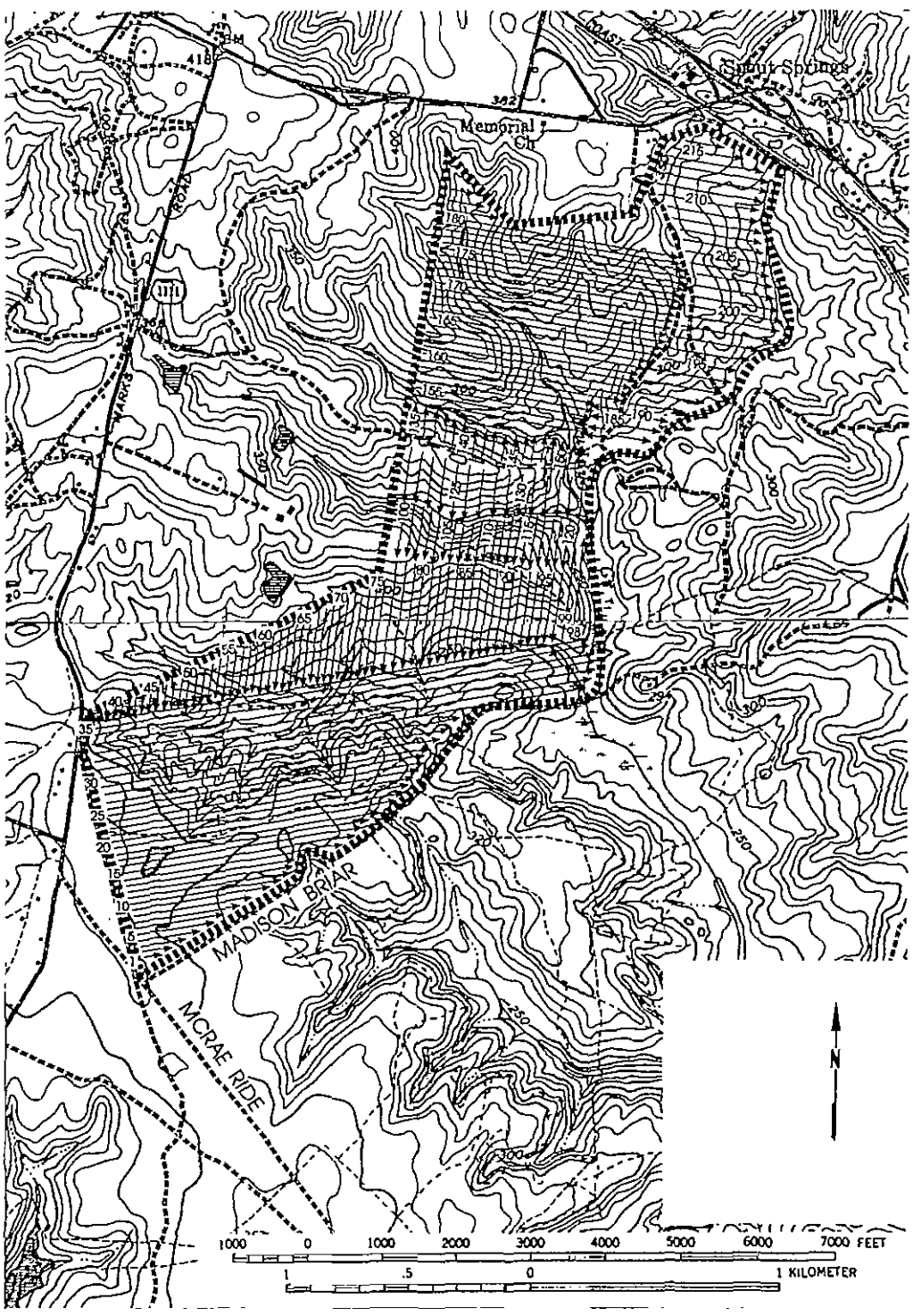

Figure 42. Survey transects at Fort Bragg general survey tract "H".

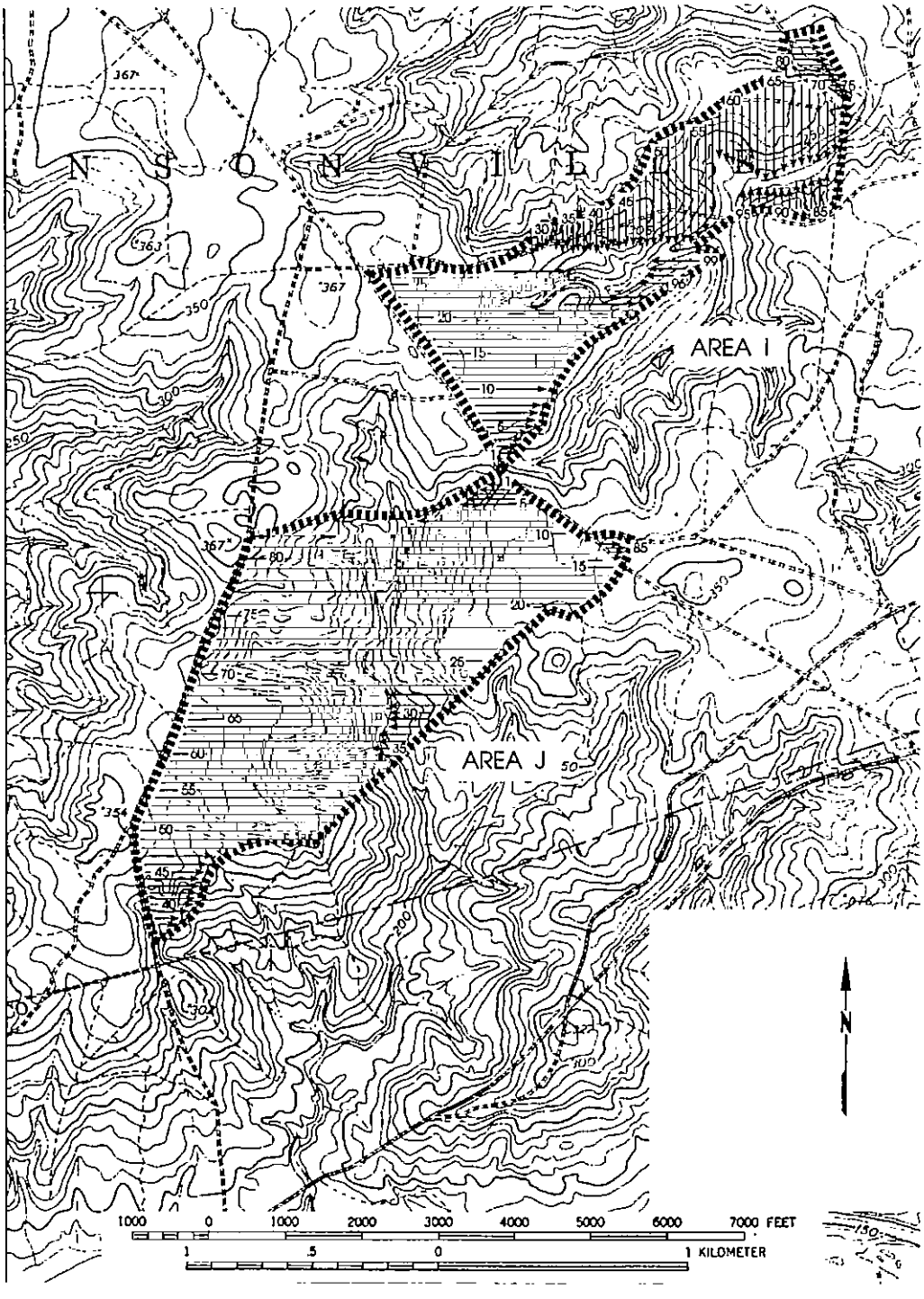

Figure 43. Survey tracts at Fort Bragg general survey tracts "I" and "J".

boundaries were defined by a combination of surface collections and positive shovel test stations.

One 50 by 50 cm test was to be excavated at each *site* to subsoil or a minimum of 100 cm (assuming subsoil was not reached). Profiles were to be drawn to scale and soil was to be described using a Munsell Soil Color designation. Photographs were to be taken using black and white and color transparency film.

At each *site*, a sketch map was to be drawn to scale showing the locations of shovel tests, test units, natural and man-made features, and datums. In addition, GPS positions were to be taken at all *sites*, and at each potentially eligible or eligible *site* a metal datum was to be established.

The GPS positions were taken with a Trimble GeoExplorer™ rover with *at least* one position recorded. Where possible, additional positions were taken since averaging provides some improvement on accuracy. These positions record the latitude, longitude, and altitude of a point. Prior to correction these positions resemble a scatter of points; affected by what is called selective availability (S/A). This is the deliberate introduction of errors into the GPS measurements by the Department of Defense.

GPS readings taken with S/A active can be corrected by comparing it to data collected simultaneously at a known location or base station. Called differential correction (or DGPS), this was undertaken with the Fort Bragg and Camp Mackall data as postprocessing. With correction, this scatter of points is consolidated to form a single position where the theoretical accuracy may be ±5 m.

The critical parameters used by the Chicora rover attempted to maximize both data quality and quantity, using the Trimble recommended default settings (for example, the PDOP mask, which is a indication of the accuracy of the GPS positions which are calculated, is set at 6, with PDOPs below 4 being excellent and above 8 being poor). Although at least 200 positions were recorded at each site location during the current survey, problems with consolidation were encountered during postprocessing. This problem was discussed with Mark Jones, LCTA Coordinator. Although unable to isolate the problem of non-consolidation, he has suggested that the problems "may be caused by an incompatible setting on either the Base Station or on the Rover Unit" (Mark Jones, personal communication 1996). Fortunately the data was still useful in this raw form. Central positions at the sites were determined from the scatter of positions recorded (Table 2). To eliminate any future problems all GPS collection conducted at Fort Bragg will be coordinated through the LCTA Coordinator to ensure compatibility, as well as proper settings for the two units to interact prior to recordation in the field.

Table 2.
UTM Coordinates for Sites in the Camp Mackall SF Training Area and Fort Bragg General Survey Tracts Using GPS with Selective Availability.

	Positions	GPS		Map Interpolation	
Site #	Recorded	N	E	N	E
31CD106	207	3886673	682339	3886695	682230
31CD528	208	3886562	682327	3886680	682270
31CD529	206	3888576	684853	3888610	684845
31HT210	216	3901418	674327	3901395	674500
31HT211	209	3901674	675007	3901640	675260
31HT212	200	3901531	674081	3901508	674140
31HT213	206	3902149	675845	3902270	676890
31HT214	120	3902775	675782	3902940	675770
31HT215	210	3903644	676275	3903630	676300
31HT216	14	3901132	674202	3901071	674250
31HT217	206	3901211	673994	3901198	674040
31HT218	209	3901408	674520	3901390	674706
31HT219	208	3901585	674768	3901580	675005
31HT220	121	3901506	674250	3901479	674370
31HT221	205	3898277	676061	3898270	676070
31HT222	205	3898949	675846	3899000	676045
31HT223	205	3898954	676224	3898990	675810
31HT224	206	3899119	676565	3899048	676565
31HT225	203	3899702	677201	3899695	677228
31HT226	205	3899609	677292	3899610	677240
31HT227	190	3896708	675173	3896680	675138
31HT228	205	3897157	675207	3897120	675260
31HT229	208	3897197	675250	3897180	675290
31HT230	210	3897184	674849	3897240	674840
31HT231	203	3901139	674219	3899840	677550
31RH287	205	3879143	638624	3879180	638660

The only other changes we can immediately identify which might improve the quality of the DGPS data would be to schedule data collection times and satellites being used based on their almanac files in order to maximize precision. This, however, is a time consuming technique and also requires that field survey be scheduled around GPS data acquisition, which is not cost-effective. Consequently, we recommend that reliance continue to be placed on map interpolation as the primary site location technique.

Table 3.
Correlation of accession numbers with site numbers

Site #	Acc. #	Site #	Acc. #	Site #	Acc.#
31CD529	96300	31HT217	96308	31HT225	96316
31HT210	96301	31HT218	96309	31HT226	96317
31HT211	96302	31HT219	96310	31HT227	96318
31HT212	96303	31HT220	96311	31HT228	96319
31HT213	96304	31HT221	96312	31HT229	96320
31HT214	96305	31HT222	96313	31HT230	96321
31HT215	96306	31HT223	96314	31HT231	96322
31HT216	96307	31HT224	96315	31RH287	96323

With this in mind, UTMs were also hand plotted. These positions are provided in Table 2. Comparing the DGPS and interpolated map coordinates reveal significant differences. While there are certainly problems recording positions in the woods, as any archaeologist will affirm, the interpolated positions have high levels of confidence since they are based on topographic features, distances and bearings to landmarks, and placement within well identified transects. In all cases the hand plotted UTMs are considerably more accurate than the DGPS coordinates.

Datums at potentially eligible sites consisted of a length of iron rebar with approximately 5 cm exposed above ground. An aluminum cap marked with the temporary site number was placed on top of the rebar. Permanent site numbers could not be used on the site datums since they had not yet been assigned by the North Carolina Office of State Archaeology.

No deviations from the original methodology described in the Scope of Work (other than those discussed above) occurred during the field work. No other unusual or expected problems occurred during the study which affects the quality of the data.

Laboratory Methods

The cleaning of artifacts and cataloging of the specimens was conducted during rain days in the field and completed at Chicora laboratories in Columbia in early July 1996. The materials will be curated at Fort Bragg and have been cataloged using that institution's accessioning practices which are those used by the North Carolina Office of State Archaeology. Table 3 provides a list of permanent site numbers and their corresponding accession numbers as assigned by the North Carolina Office of State Archaeology. No specimens were identified which required conservation or stabilization. Specimens were packed in plastic bags and boxed. Field notes were prepared on pH neutral, alkaline buffered paper and photographic materials were processed to archival standards. All field notes, with archival copies, will also be curated with this facility.

Analysis methods focused on occupation spans, likely functions of the various sites, and changes in raw material preferences. For those sites which were prehistoric, diagnostic lithics and/or ceramics provided temporal information. The diagnostic lithic remains were compared to published typological descriptions for the various projectile points such as Coe (1952, 1964), Oliver (1981), and South (1959).

Two primary materials were identified in the lithic collections. One was quartz, which was usually a translucent white, but occasionally reddish, grayish, yellowish-brown, or clear. This material is found throughout the Carolina Piedmont and might have been obtained from either veins or as cobbles in river gravels washed from the Piedmont. The other common material was classified simply as metavolcanic, meaning partially metamorphosed volcanic rocks. This might include flow banded rhyolite, porphyritic rhyolite, plain rhyolite, felsic tuff, welded vitric tuff or breccia tuff.

Debitage categories included primary

(defined as flakes with 90% or more cortex), secondary (defined as having 1% to 90% cortex), interior (defined as having no cortex). These categories, widely used, are briefly explained by Yohe (1996:54-56). More refined categories, where they are used, follow the definitions offered by Blanton et al. (1986), Oliver et al. (1986), and occasionally Yohe (1996).

At the survey level tools are defined very simply, being placed in broad morphological categories. Our laboratory methods, for example, define a biface as an artifact with flakes removed on both sides (not distinguishing between preforms, early stage reductions, and so forth); a core is a piece of raw material from which flakes have been removed; an end scraper is a blade tool with at least one convex end which exhibits a steep angle; a used flake is a chip of stone that was used as a tool, exhibiting edge damage or wear; and a side scraper is a flake tool in which one of the long edges was retouched to serve as the scraping edge. These definitions generally follow those provided by Yohe (1996).

Pottery examples were compared to typological descriptions provided by Coe (1964), Loftfield (1976), and South (1959) for the south coastal region and the North Carolina Piedmont. They were also compared to the type descriptions offered by Phelps (1983) for the north coastal region.

Analysis of the historic collections followed professionally accepted standards with a level of intensity suitable to the quantity and quality of the remains. In general, the temporal, cultural, and typological classifications of the historic remains follow such authors as Cushion (1976), Godden (1964, 1985), Miller (1980, 1991), Noël Hume (1978), Norman-Wilcox (1965), Peirce (1988), Price (1970), South (1977), and Walton (1976). Glass artifacts were identified using sources such as Jones (1986), Jones and Sullivan (1985), McKearin and McKearin (1972), McNally (1982), and Vose (1975). Sutton and Arkush (1996) provide an excellent overview of a broad range of other historic materials, although primary sources will typically be provided in the text if the remains require a more detailed analysis.

RESULTS OF SURVEY

Introduction

The cultural resources identified during the intensive survey of the 29.57 ha Camp Mackall Special Forces Training Area survey tract at Fort Bragg consist of one archaeological site and no isolated occurrences (Table 4, Figure 50). This site (31RH287*) is recommended as not eligible for inclusion on the National Register of Historic Places.

The cultural resources identified during the intensive survey of the 776.55 ha Fort Bragg general survey tracts consist of 10 archaeological sites and 15 isolated occurrences. Only one site, (31CD106**) was previously recorded and this resource is recommended as eligible for inclusion on the National Register of Historic Places. All other resources recorded during the Fort Bragg general survey are recommended as ineligible for inclusion on the National Register of Historic Places and no additional testing of these resources is recommended.

Other than the Pet Cemetery and gravesite of Moses Whitehead and Annie J. Chavis in area "C", only one historic site was identified during the intensive survey. This site, (31HT231**) was found in survey tract "J". All of the remaining sites and occurrences within the Fort Bragg general survey tracts contained prehistoric cultural resources. The prehistoric sites, by convention of the North Carolina Archaeology Branch are designated by an asterisk (*) following the site number. The historic sites are designated by two asterisks (**) following the site

Table 4.
Archaeological Sites Identified at Camp Mackall SF Training Area and Fort Bragg

Site Number	Components	Artifacts	Size (m^2)	Quadrangle	Eligibility
	Camp Mackall Special Forces Training Area Survey				
31RH287*	Lithic	26	720	Pinebluff	NE
	Fort Bragg General Survey, Tracts "A" through "J"				
31CD106**	Historic	0	2	Fayetteville	E
31CD528**	Historic	0	1,776	Fayetteville	NE
31CD529*	Isolated lithic	1	1	Manchester	NE
31HT210*	Lithic	12	185	Overhills	NE
31HT211*	Lithic	44	3,175	Overhills	NE
31HT212*	Lithic	15	325	Overhills	NE
31HT213*	Lithic/Yadkin	109	2,125	Olivia	NE
31HT214*	Lithic	44	835	Olivia	NE
31HT215*	Lithic	10	325	Olivia	NE
31HT216*	Isolated lithic	1	1	Overhills	NE
31HT217*	Isolated lithic	1	1	Overhills	NE
31HT218*	Isolated lithic	1	1	Overhills	NE
31HT219*	Isolated lithic	1	1	Overhills	NE
31HT220*	Isolated lithic	2	1	Overhills	NE
31HT221*	Isolated lithic	1	1	Overhills	NE
31HT222*	Isolated lithic	1	1	Overhills	NE
31HT223*	Isolated lithic	2	1	Overhills	NE
31HT224*	Isolated lithic	1	1	Overhills	NE
31HT225*	Lithic	24	1,332	Overhills	NE
31HT226*	Isolated lithic	1	1	Overhills	NE
31HT227*	Isolated lithic	2	1	Overhills	NE
31HT228*	Isolated lithic	1	1	Overhills	NE
31HT229*	Isolated lithic	5	1	Overhills	NE
31HT230*	Isolated lithic	4	1	Overhills	NE
31HT231**	Historic	26	2,300	Overhills	NE

E = eligible for inclusion on the National Register; NE = not eligible for inclusion on the National Register

Figure 44. Site recorded in the Camp Mackall Special Forces Training Area survey tract.

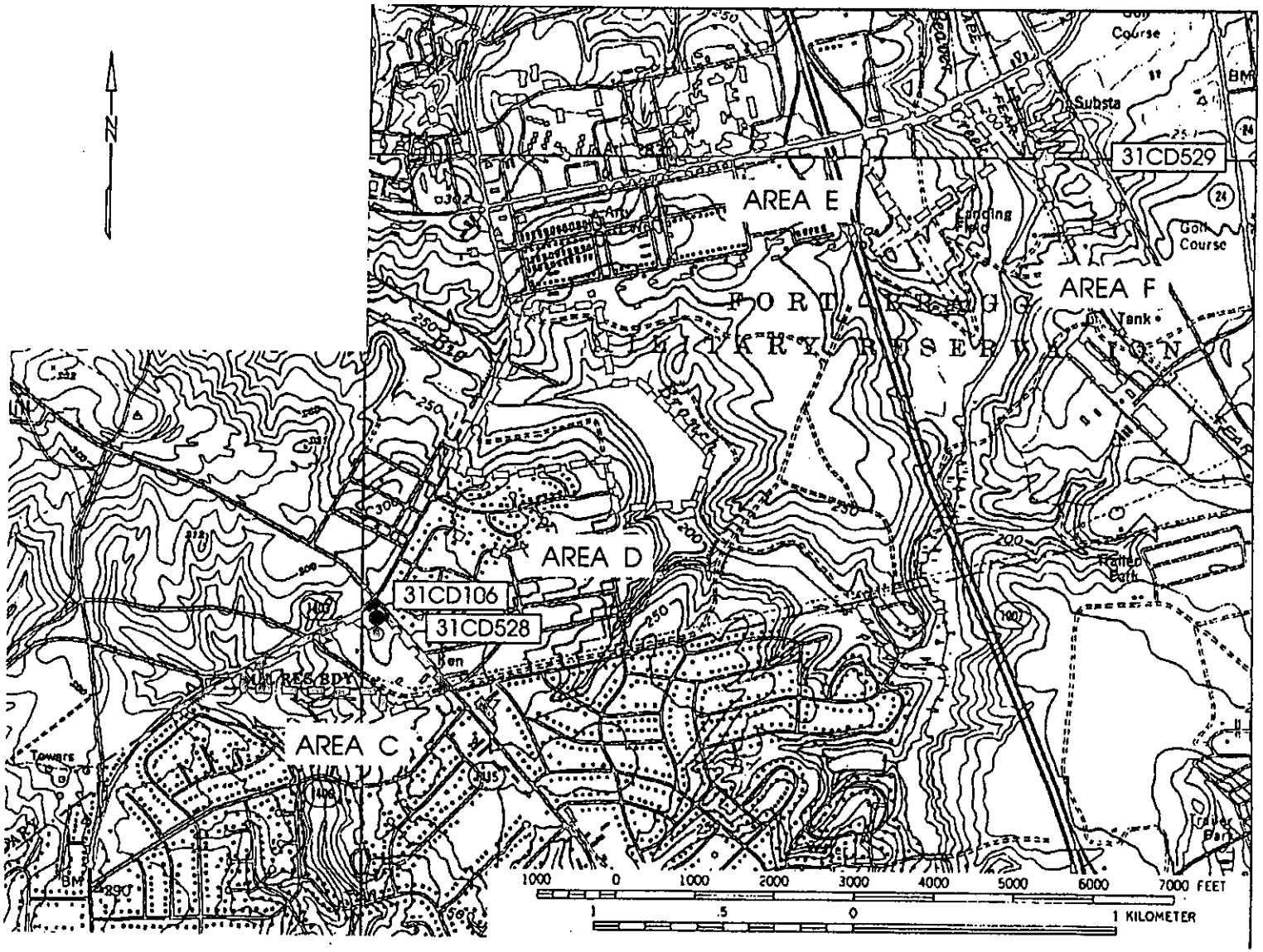

Figure 45. Sites recorded in Fort Bragg general survey tracts "C" and "F".

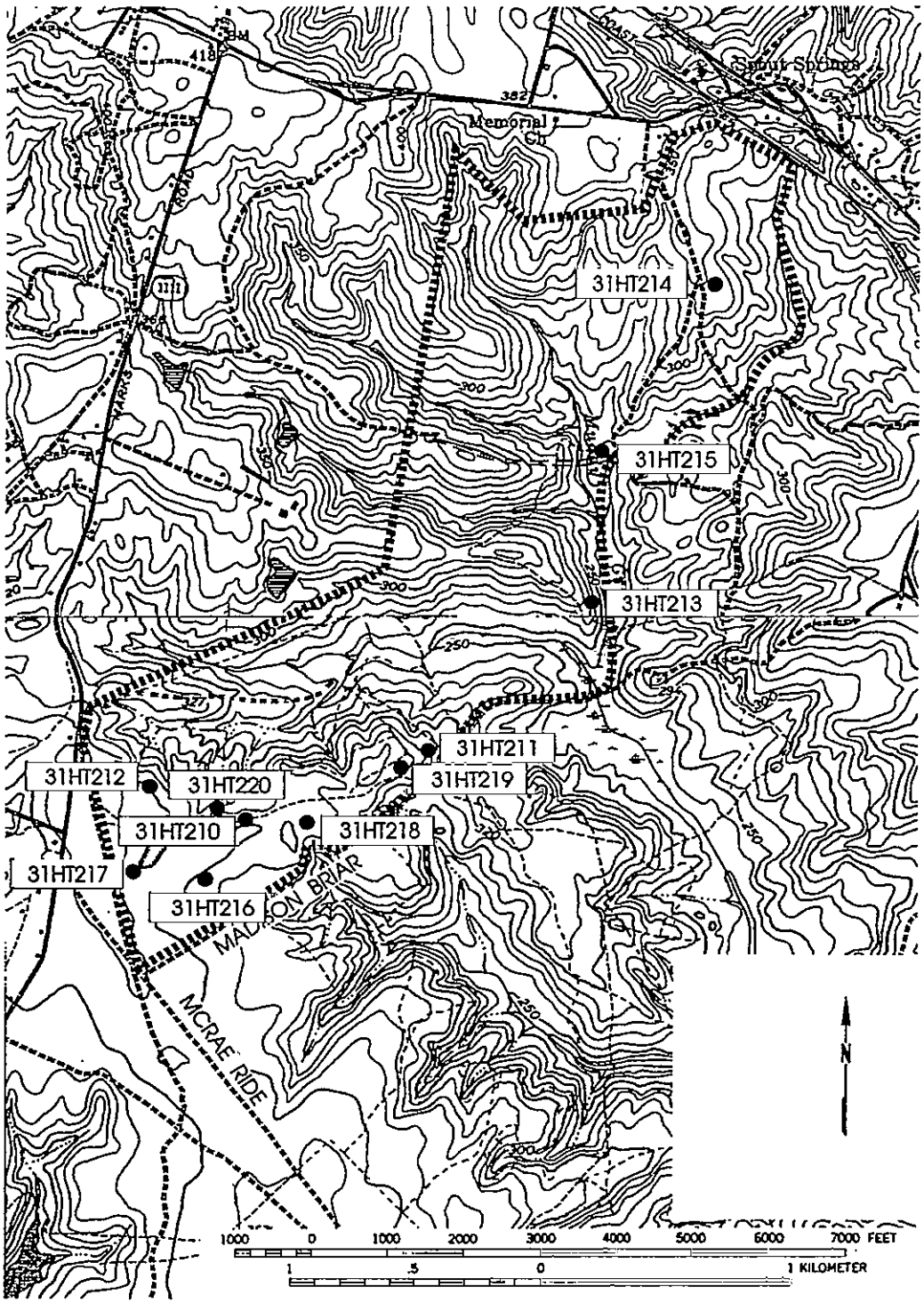

Figure 46. Sites recorded in Fort Bragg general survey tract "H".

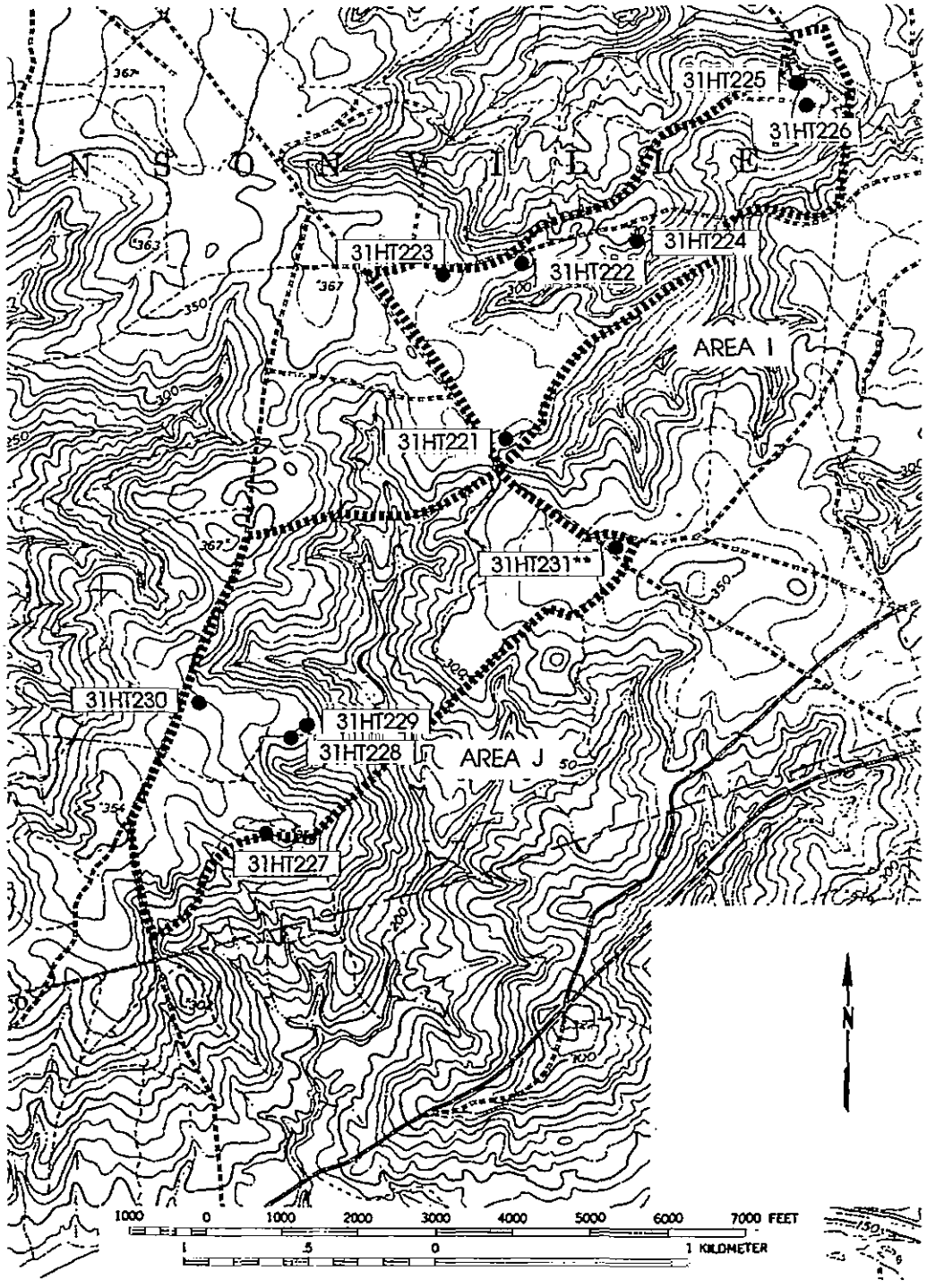

Figure 47. Sites recorded in Fort Bragg general survey tracts "I" and "J".

number.

Revisited Archaeological Sites

31CD106**

Site 31CD106** is a historic period gravesite located about 93 m south of the intersection of Yadkin Road and Reilly Road and 45 m west of Reilly Road. The central UTM coordinates are N3886695 E682230. The site is situated approximately 900 m south of Big Branch Creek. This is the nearest modern permanent source of water. The elevation at the site is 63 m with a slope of 0 to 5%. Based on the current survey, the site appears to be approximately 2 m^2 and measures 1.5 by 0.7 m in size (Figure 48).

The site was originally identified by Jameson (1986) and contained the monument, as well as five other depressions (Jameson 1986:3). As to the monument, he concluded that the site consisted of "two apparently adjacent graves, oriented east-west with a single monument (headstone ?), which, presumably was placed on the west end of the graves" (Jameson 1986:2). The other depressions, ranging in size from 3 m^2 to 25 m^2, were suggested to be the "result of undocumented training exercises" performed on the base prior to 1960 (Jameson 1986:3). Although subsurface testing was performed, these other depressions were not found. Nevertheless, Jameson (1986) recommended that no further work need be performed at this site.

Vegetation at the site consists of mixed hardwoods and farm pines. Consequently, surface visibility is nonexistent due to pine straw and leaves. The site was initially revealed by a gravestone monument with fence surround while running 60 m transect lines.

The grave site consists of a headstone 55 cm in height and 52 cm square at the base. The monument graduates to a central base 14 cm square. This holds the final pillar of the stone which is 10 cm quare. The monument is surrounded by a protective fence 1.49 m by 66 cm made of three wooden planks supported by six concrete posts. The monument is inscribed on the north, east and south faces. The north face reads: "ANNIE J. CHAVIS, HIS WIFE, SEPT. 14, 1839, AUG. 29, 1909". The east face reads: "AN HONEST MAN IS THE NOBLEST WORK OF GOD. IN LIFE BELOVED, IN DEATH LAMENTED". The south face of the monument reads: "MOSES WHITEHEAD, AUG. 7, 1837, APR. 7, 1905".

None of the previous depressions, observed by Jameson (1986), were found during the Chicora survey of tract "C". It is possible that these have been backfilled since Jameson's survey in 1985 or have filled in over time due to slumpage of sidewalls and needle fall.

Although Jameson (1986) felt that the cemetery "may be of social or historical interest locally and may be valued by living descendants" (Jameson 1986:4), it was his recommendation that since the grave site does not appear to have transcendent importance or other elements of historic values, that site 31CD106** is ineligible for the National Register of Historic Places.

This site, as a marked gravesite, is protected by the North Carolina General Statutes. Nevertheless, the potential for damage to this site is great considering the inherent commercial and military value of the sites location. Further, state laws protecting human interments are clearly distinct and separate from questions regarding National Register eligibility.

Over a decade ago the National Park Service Consulting Archaeologist, Dr. Benny Keel, explored the issue of historic cemeteries, noting that they were clearly eligible for inclusion on the National Register when they "will produce important information *not available elsewhere*" (Keel 1985:215). One of the Southeast's leading forensic anthropologists, Dr. Ted Rathbun, explores this issue in greater depth, noting that:

> cemetery data are extremely important above and beyond the usual categories associated with distinctive persons, design features, and association with historic events. This narrow

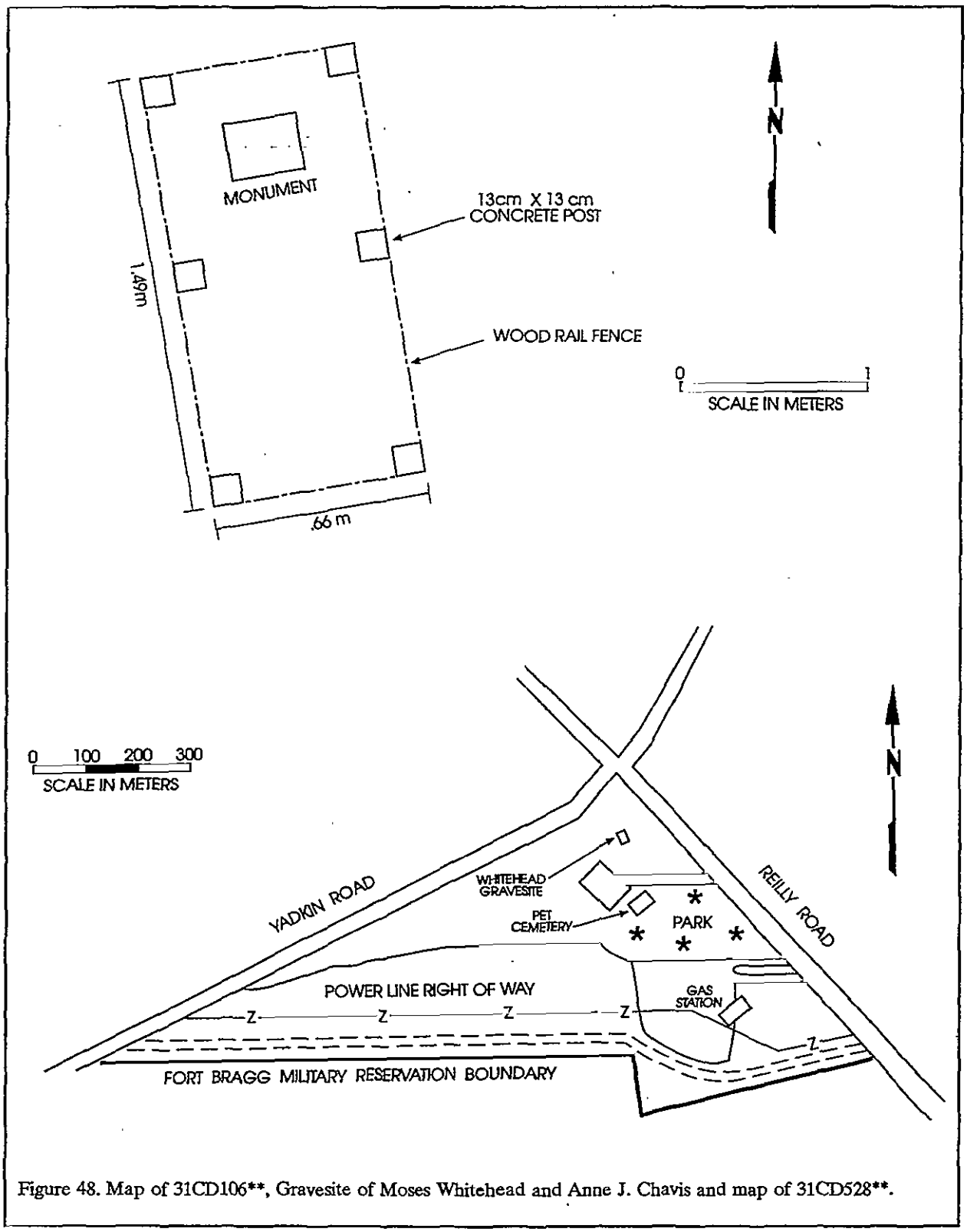

Figure 48. Map of 31CD106**, Gravesite of Moses Whitehead and Anne J. Chavis and map of 31CD528**.

> definition of historic importance fails to recognize that human remains provide data of considerable historic importance. Not only are many segments of the population omitted from typical historical sources, but the skeletal remains provide empirical evidence directly relevant to broad historical issues in health, nutrition and social customs. The biological history of our nation has received insufficient attention . . . . Even if some of the information inferred from bioarchaeological analysis is available from other sources, validity and accuracy of other records can be evaluated through comparison with the physical evidence (Rathbun 1985:208).

Rathbun briefly mentions several important issues in evaluating the eligibility of historic cemeteries. First, and most importantly, he observes that they are reservoirs for extraordinary amounts of biocultural data. Information on diet, health, disease, morbidity, stature, demographics, and trauma can all be derived from historic cemeteries. In addition, we should also add that historic cemeteries are equally important data sources for understanding the changing American "way of death," exploration of common mortuary patterns, use of coffin hardware, and even examination of changing landscape patterns associated with cemeteries. Even seemingly isolated graves offer the potential to explore and examine almost this entire range of issues. Rathbun also correctly points out that our study of historic burial practices, historic cemeteries, and the associated biocultural data has been generally ignored. While the situation is certainly better today, there remain far too few studies in this important research area.

Secondly, Rathbun notes that while there are alternative sources of data, these often focus on the wealthy and elite members of society. There are relatively few sources of information on either African American slaves or small white landowners -- groups which remain the "invisible people" of the South. The importance of exploring new approaches and understanding the extraordinary importance of these sites has recently been discussed by Niquette and Ross-Stallings (1995).

While there are still pockets of resistance to the treatment of graveyards and historic cemeteries as National Register eligible properties, this comes largely from a prehistoric bias in many review agencies. The argument that a cemetery is protected by state law, fails to recognize that however holy and spiritual cemeteries are, it is sometimes impossible to avoid them in construction projects (or perhaps even in military exercises). With no more protection than state law, typically marked cemeteries will be removed by the local undertaker, absent any scientific examination or exploration. The information such sites can provide is squandered in the process. Only with the recognition that the site is also worthy of inclusion on the National Register can a marked cemetery be elevated beyond the routine relocation activities of backhoes and pasteboard "coffins."

We believe that the data sets likely to be present at this site include forensic data available from skeletal materials and biocultural data available from the coffin and its fittings, as well as the placement and preparation of the body. The historic context for this region has been previously discussed, and we need only emphasize that little is known of the Scotch-Irish who settled the area.[1] Atkinson (1987), Dockall et al. (1996), Niquette and Ross-Stallings (1995), and Rathbun (1985) are but a few of the researchers who provide detailed research questions appropriate, and important, to not only historic cemeteries, but also isolated graves.[2] Finally, while we have avoided disturbing

[1] We understand that the North Carolina State Historic Preservation Office has requested that the North Carolina Department of Transportation develop research protocols for historic Scots-Irish cemeteries, but that the document is not yet complete (see Niquette and Ross-Stallings 1995).

[2] While somewhat dated now, reports by Phelps et al. (1979) and Ward and Graham (1978) explore historic burial excavations, and the data they can contribute, in North Carolina.

this site by the excavation of shovel tests, we have no evidence that the remains have been disturbed. There is no looting hole on or around the grave. There is no evidence of the marker being repaired (and hence suggesting previous, extensive, damage). The evidence of nearby depressions, which may be military related, do not appear to have impacted the gravesite. In sum, the site integrity appears high.

Within this parameter of review stipulated by *National Register Bulletin* 36 (Townsend et al. 1993), 31CD106** is recommended eligible for inclusion on the National Register of Historic Places.

Newly Identified Archaeological Sites

31RH287*

Site 31RH287* is located 330 m southeast of the Camp Mackall Special Forces cantonment area and 390 m down a fire break road northeast of the intersection of Glider road and the water treatment plant. The site is 30 m north of the fire break road in a base garden plot. Drowning Creek is located 650 m northwest of the site. The central UTM coordinates are N3879180 E638660. This site is located on a low terrace overlooking a small drainage 40 m to the south. The elevation at the site is 85 m and, based on the surface collection, the site measures about 50 m east-west by 25 m north-south making the site approximately 720 m^2 in size (Figure 49).

Vegetation at the site is new growth field grass which allowed approximately 50% visibility. The site was first encountered during the running of routine transects associated with shovel testing. No artifacts were recovered during transect shovel tests. A controlled surface collection was made using a numerically designated 30 m grid. The surface collection recovered a total of 21 artifacts. Collection Unit 1 yielded 12 artifacts. These included five interior metavolcanic flakes, five interior quartz flakes, and two metavolcanic cores weighing 127.67 g. Collection Unit 2 contained a total of nine artifacts. These included six interior metavolcanic flakes and three interior quartz flakes.

A 50 cm test unit was centrally placed in an area which contained the highest concentration of artifacts. Excavated to a depth of 50 cm, a total of three artifacts were recovered from this unit. These included one interior metavolcanic flake from 0 to 10 cm in depth and one interior metavolcanic flake and one interior quartz flake from the 10 to 20 cm level. The test unit soil profile consisted of 20 cm of gray (10YR5/1) sandy loam, overlying 15 cm of grayish brown (10YR5/2) sand, over 15 cm of yellowish brown (10YR 5/6) sand. The soils are classified as Pelion sand. It is evident from the soil profile that these soils are heavily disturbed through cultivation

Using the center of the test unit as a base point, designated N200E200, an additional 11 shovel tests were excavated in a cardinal grid pattern at 15 m intervals. Only one test unit, N175E200, produced artifacts — two interior metavolcanic flakes. All shovel tests were excavated to depths ranging from 60 to 75 cm below surface. It is evident, from the soil profile, that these soils are heavily disturbed through cultivation. Plowscars were discernable to a depth of 25 cm which may be the result of heavy tractor plows being used in coarse and friable soils.

No diagnostic artifacts were recovered from the site to provide information on temporal placement and it seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding research topics (Townsend et al. 1993:32). Even though subsurface remains were recovered, soil profiles indicate that the site has been heavily disturbed. Site 31RH287* is recommended as not eligible for inclusion on the National Register of Historic Places.

31CD528**

Site 31CD528** is a twentieth century pet cemetery. Located in survey tract "C" the cemetery is approximately 153 m south of the intersection of Yadkin Road and Reilly Road and 90 m west of

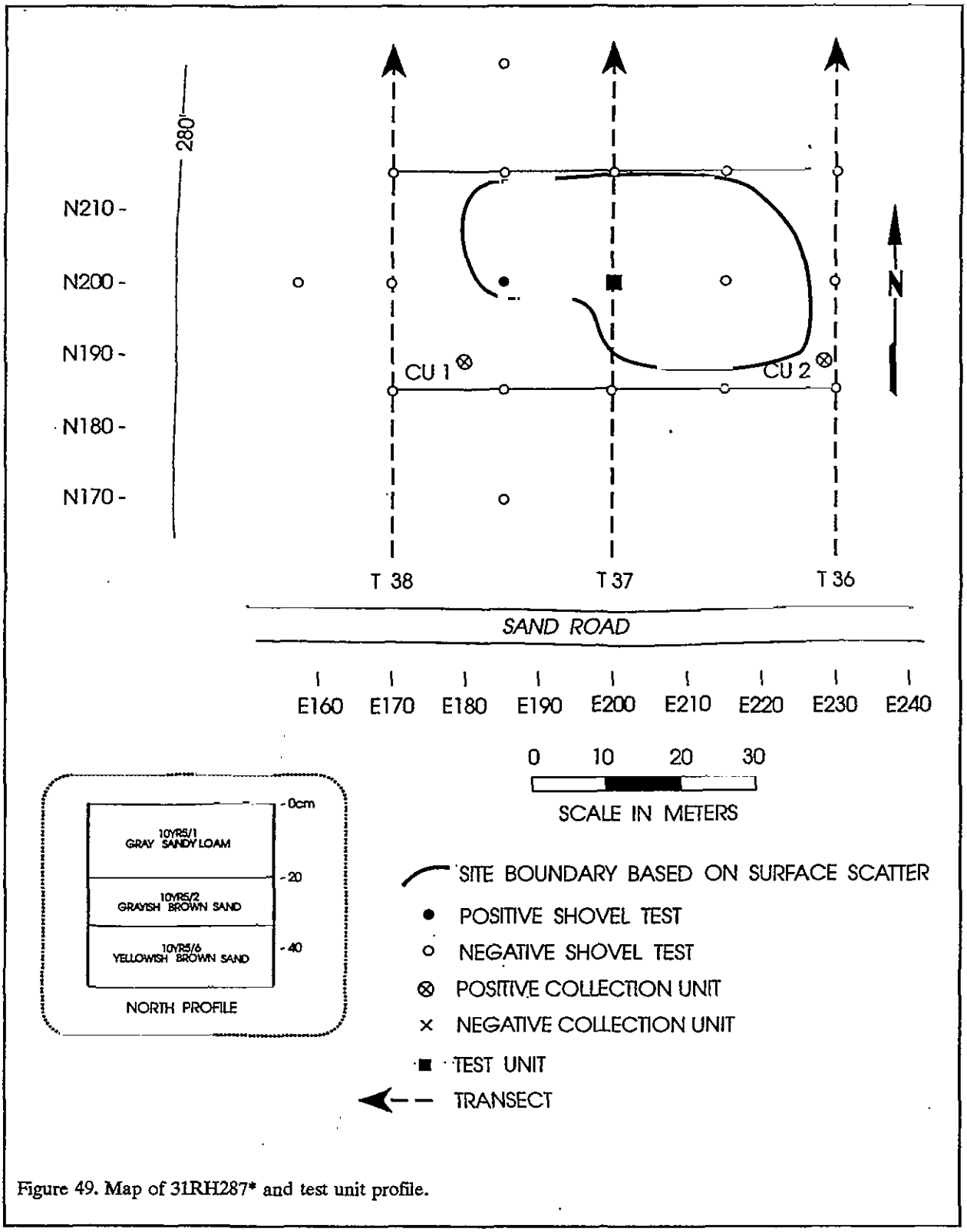

Figure 49. Map of 31RH287* and test unit profile.

Reilly Road. The central UTM coordinates are N3886695 E682230. The site is situated approximately 960 m south of Big Branch Creek. This is the nearest modern permanent source of water. The elevation at the site is approximately 65 meters with a slope of 0 to 5%. A rope fence, supported by wooden posts, defines the cemetery boundaries. This fence runs approximately 48 m northeast by 37 m southwest, making the site approximately 1,776 m^2 in size (Figure 48).

Although originally identified by Jameson (1986), no site number was assigned. Only its location was noted on the field map produced in his 1986 report (Jameson 1986:6). Jameson (1986) offered no recommendation as far as National Register status is concerned.

Although Chicora considers this site as ineligible for the Nation Register of Historic Places, it is felt that site 31CD528 should be archaeologically identified. This site is important due to its local interest and obvious continued association with human lifeways. The study of late twentieth century funerary customs associated with domesticated house pets may be of interest to future studies of human behavior. Thus, this site should be protected as much as possible from intrusive forces.[3]

31HT210*

Site 31HT210* is located 570 m down a fire break road northeast of the intersection of Madison Briar Road and McRae Ride Road. The site lies 420 m to the east of the fire break road. The central UTM coordinates are N3901395 E674500. The site is located on a ridge top with a 5% slope to the north. A small yet exceedingly deep drainage of Muddy Creek lies 90 m to the north. In terms of a permanent water source, the main channel of Muddy Creek lies approximately 810 m to the northeast. The site is situated at an elevation of about 105 m and the shovel testing revealed that the site measures about 15 m north-south by 15 m east-west making the site approximately 185 m^2 in size (Figure 51). A total of 12 artifacts were recovered from shovel tests and the test unit.

Vegetation at the site is a mix of pine and hardwood with a scrub oak understory. Surface visibility was non-existent and no surface collections were made. The site was encountered during routine shovel testing. One interior quartz flake was recovered from ST14 on T19 at a depth of about 40 cm.

Once encountered, 16 additional shovel tests were excavated, at 10 m intervals, in cardinal directions from the original positive shovel test (T19, ST14). All shovel tests were excavated to a depth of 60 cm to 75 cm. Of the 16 shovel tests two (12.5%) yielded subsurface remains. Test N200E210 produced one interior metavolcanic flake from a depth of less than 60 cm, while N210E210 produced one interior metavolcanic flake within the upper 40 cm.

A 50 cm test unit was located along the hypotenuse of the three positive shovel test locations and excavated to a depth of 70 cm. A total of nine artifacts were recovered from the test unit. Two interior quartz flakes were recovered from 20 cm to 30 cm below surface. A total of five artifacts, two interior metavolcanic flakes and three interior quartz flakes, were recovered from the 30 cm to 40 cm level, and one interior metavolcanic flake and one interior quartz flake were recovered from the 40 cm to 50 cm level. The soil profile of the test unit was a pale brown (10YR 6/3) sandy loam to 12 cm overlaying 40 cm of yellowish brown (10YR 5/4) fine sand, over a yellowish brown (10YR 5/6) sand (Figure 50). The soils for this site are identified as Candor sands. The profile for this unit is not consistent with those typically found. The Ap horizon is non-existent and the E horizon occurs at the surface. This would indicate that even in this relatively protected, wooded area

[3] We realize that some colleagues will likely not be interested in such "modern" sites or sites which seem collateral to human activity. There have been a number of studies exploring the importance of seemingly "modern" material culture to our understanding (see, for example, Ames 1985). Most recently a series of collected works have explored a vast range of modern society, including such diverse topics as skyscrapers, fast-food, and billboards (Leone and Siblerman 1995).

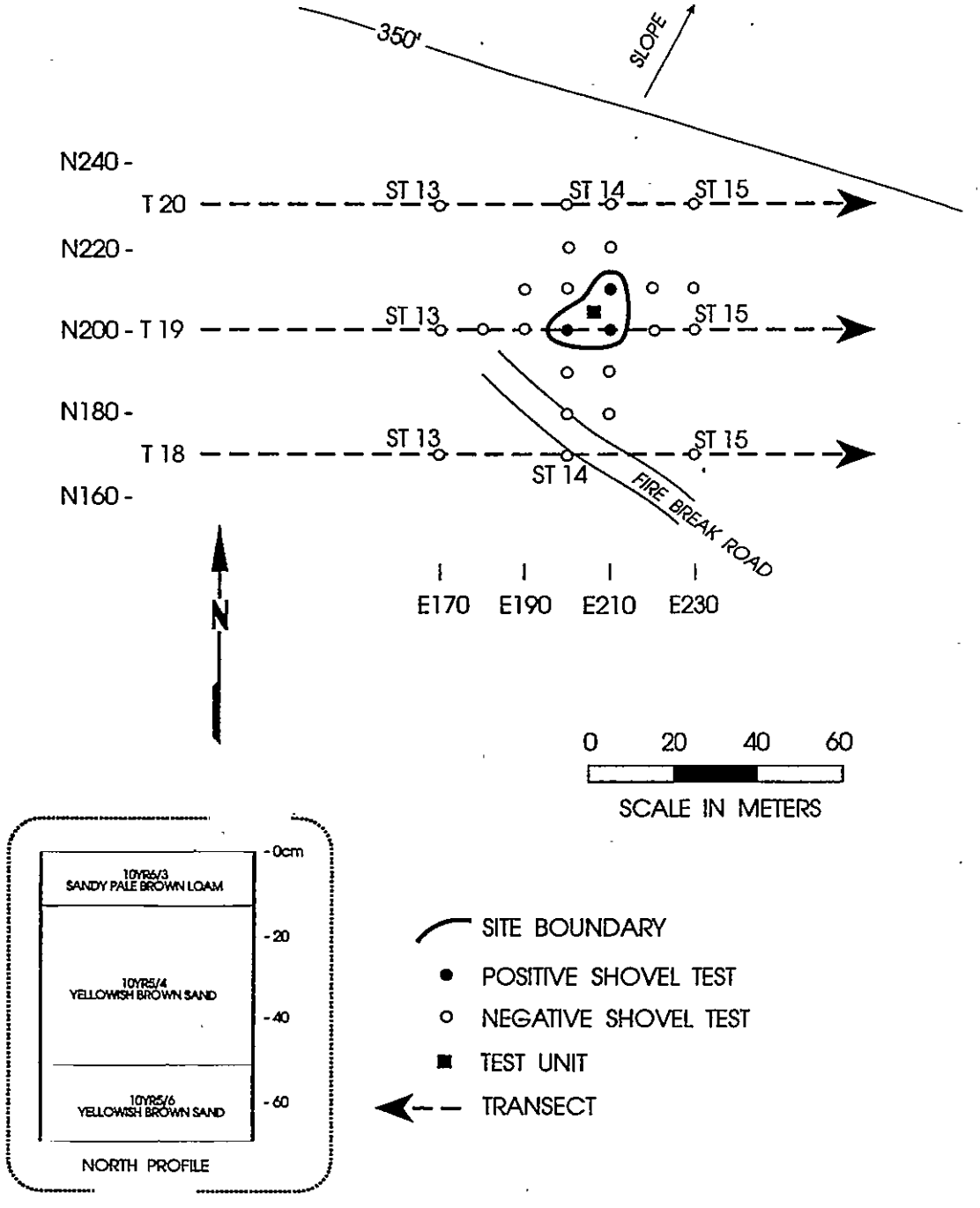

Figure 50. Map of 31HT210 and test unit profile.

of Fort Bragg that there has been significant soil loss possibly due to previous clear cutting and/or cultivation.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. While four of the 19 excavations (21.1%) produced artifacts, the data sets are limited to debitage. No evidence was encountered of features (which of course isn't surprising considering the generally loose and unconsolidated sands). All of the specimens were found between 30 cm and 60 cm.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site *can* provide, primarily on settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT210* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT211*

Site 31HT211* is located 690 m down a fire break road northeast of the intersection of Madison Briar Road and McRae Ride Road. The site lies 108 m to the east of the fire break road. The site is also surrounded by interior fire break roads which lie 64 m to the north, 45 m to the south, and 0 m to the east. The central UTM coordinates are N3901640 E675260. The site is located on an upland ridge side with a 5% slope to the north. A small yet exceedingly deep drainage of Muddy Creek lies 240 m to the north. In terms of a permanent water source, the main channel of Muddy Creek lies approximately 390 m to the east. The site is situated at an elevation of about 91.5 m and shovel testing revealed that the site measures approximately 60 m north-south by 120 m east-west making the site approximately 3,175 m^2 in size (Figure 51). A total of 44 artifacts were recovered from shovel tests and the test unit.

Vegetation at the site is a mix of pine and hardwood with a scrub oak understory. Surface visibility was non-existent and no surface collections were made. A number of positive shovel tests were encountered during routine shovel testing. Three interior metavolcanic flakes were recovered on T22 from ST36 at a depth of about 40 cm. Nine interior metavolcanic flakes were recovered from T23 from ST37 at a depth of about 30 to 40 cm. A total of four artifacts, three interior metavolcanic flakes and one interior quartz flake, were recovered on T23 from Shovel 39 at a depth of approximately 35 cm, and one secondary quartz shatter was recovered on T24 from ST36 at an approximate depth of 40 cm.

Once encountered, 88 additional shovel tests were excavated, at 10 m intervals, in cardinal directions from the original positive shovel test (T22, ST36). In addition, 10 shovel tests excavated during routine shovel testing along transects 22, 23, and 24 were negative. All shovel tests were excavated to a depth of 60 cm to 75 cm. Of the 98 total shovel tests 18 (18.36%) yielded subsurface remains. A total of 42 artifacts, which included 29

Table 5.
Artifacts Recovered from Subsurface Testing at 31HT211

	Flakes	
Shovel Test	Metavolcanic	Quartz
T22, ST36	3	
T23, ST37	9	
T23, ST39	3	1
T24, ST36		1
N200E210		1
N200E240		4
N200E250	1	
N220E220	1	
N220E250	1	
N230E180	2	1
N230E190	1	
N230E220	3	
N230E280	1	
N240E220	1	
N240E230		1
N240E240	1	
N240E250		1
N240E270		1
N240E280	1	
N250E170	1	
N250E180		1
N260E250		1
TU2, 20 to 30 cm	1	1

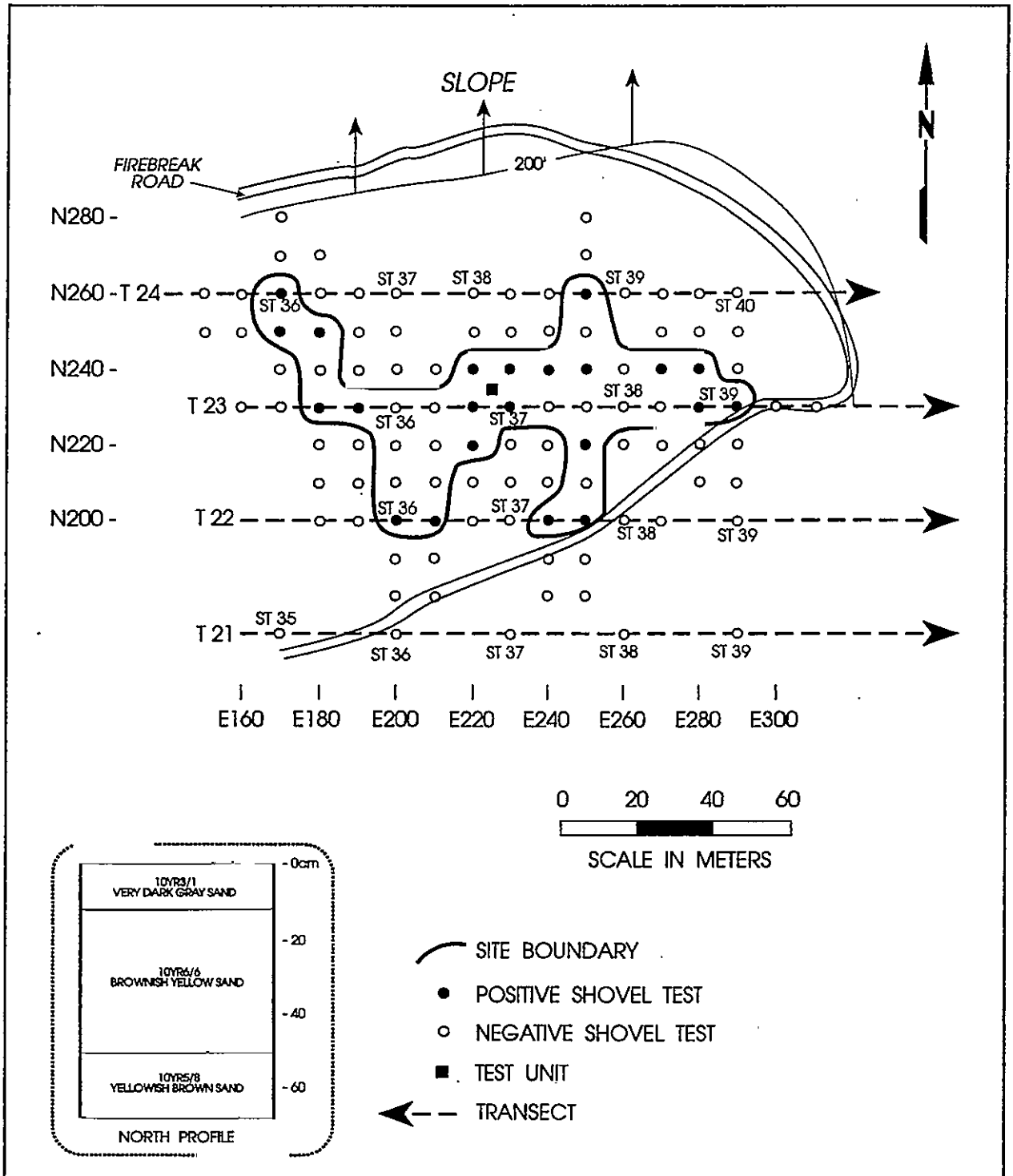

Figure 51. Map of 31HT211* and test unit profile.

interior metavolcanic flakes, 11 interior quartz flakes, and two secondary quartz shatters, were recovered during close interval testing (Table 5). All artifacts recovered came from approximately 30 to 50 cm in depth.

A 50 cm test unit was located within the central portion of the site parameters and excavated to a depth of 70 cm. A total of two artifacts were recovered from the test unit. One interior metavolcanic flake and one interior quartz flake were recovered from the 20 cm to 30 cm level. The soil profile of the test unit was a very dark gray (10YR 3/1) sand to 12 cm overlaying 38 cm of brownish yellow (10YR 6/6) sand, over a yellowish brown (10YR 5/8) sand (Figure 51). The soils for this site are identified as Blaney sands. Although the A horizon seems to be intact, the appearance of the B horizon 32 cm above the typical Blaney soil profile would indicate that a substantial amount of erosion/deflation has already occurred at this site with the subsequent creation of a new A horizon. This would indicate that even in this relatively protected, wooded area of Fort Bragg that there has been significant soil loss possibly due to previous clear cutting and/or cultivation.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. Although 18 of the 98 excavations (18.36%) produced artifacts, the data sets are limited to debitage. No evidence was encountered of features. All of the specimens were found between 30 cm and 50 cm.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site *can* provide, primarily on settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT211* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT212*

Site 31HT212* is located 720 m down a fire break road northeast of the intersection of Madison Briar Road and McRae Ride Road. The site lies 180 m to the east of the fire break road. The central UTM coordinates are N3901508 E674140. The site is located on a terrace with a 5% slope to the north. A small yet exceedingly deep drainage of Muddy Creek lies 120 m to the north and east of the site. In terms of a permanent water source, the main channel of Muddy Creek lies approximately 990 m to the northeast. The site is situated at an elevation of about 107 m and the shovel testing revealed that the site measures about 20 m north-south by 30 m east-west making the site approximately 325 m^2 in size (Figure 52). A total of 15 artifacts were recovered from shovel tests and the test unit.

Vegetation at the site is a mix of pine and hardwood with a scrub oak understory. Surface visibility was non-existent and no surface collections were made. The site was found during routine shovel testing. Four quartz flakes were recovered on T24 from ST6 at a depth of 50 cm.

Once encountered, 16 additional shovel tests were excavated, at 10 m intervals, in cardinal directions from the original positive shovel test (T24, ST6). All shovel tests were excavated to a depth of 60 cm to 75 cm. Of the 16 shovel tests two (12.5%) yielded subsurface remains. Test N200E220 produced four interior quartz flakes from a depth of less than 60 cm, while N210E220 produced one interior metavolcanic flake, within the upper 50 cm.

A 50 cm test unit was located between test N200E220 and N210E220 and excavated to a depth of 80 cm. Six artifacts were recovered from the test unit. Two interior metavolcanic flakes were recovered from the 20 cm to 30 cm level. A total of three artifacts, two interior metavolcanic flakes and one interior quartz flake, were recovered from the 30 cm to 40 cm level, and one interior quartz flake was recovered from the 50 cm to 60 cm level. The soil profile of the test unit was a yellowish brown (10YR 5/4) sandy loam to 16 cm overlaying

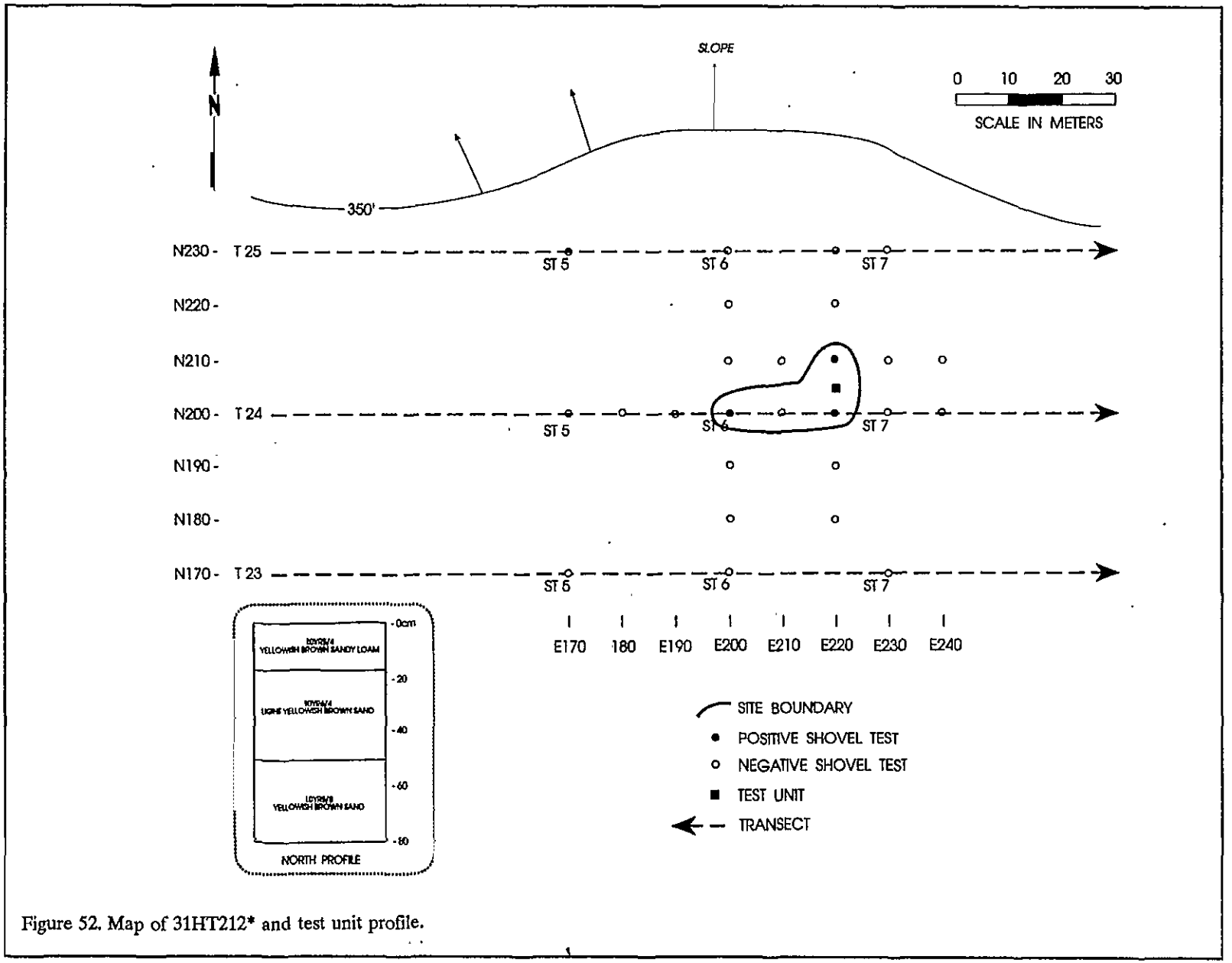

Figure 52. Map of 31HT212* and test unit profile.

32 cm of light yellowish brown (10YR 6/4) fine sand, over a yellowish brown (10YR 5/8) sand (Figure 52). The soils for this site are identified as Candor sands and although fairly consistent with the recovered soil profile there seems to be no Ap horizon present, indicating that deflation has occurred at this site. This would again suggest that even in this relatively protected, wooded area of Fort Bragg that there has been significant soil loss.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. While two of the 16 excavations (12.5%) produced artifacts, the data sets are limited to debitage. No evidence was encountered of features. All of the artifacts were recovered between 30 cm and 60 cm.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site *can* provide, primarily on settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT212* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT213*

To reach site 31HT213* one must proceed from the intersection of Madison Briar Road and McRae Ride Road northeast down the fire break road to the northwestern boundary of the survey area. The Fort Bragg Military Reservation boundary road then turns east, then north. The first right is another fire break road that dead ends into the northern drainage of Muddy Creek. The site is located 120 m south of that point and lies between two drainages. The central UTM coordinates are N3902270 E676890. The site is located on a low terrace with a steep rise to the north. The site area exhibits a 5 to 15% slope to the south. The eastern side of the site borders on the main channel of Muddy Creek and the western side borders on a drainage of that creek. The site is situated at an elevation of about 76 m and shovel testing revealed that the site measures approximately 90 m north-south by 30 m east-west making the site approximately 2,125 m^2 in size (Figure 53). A total of 109 artifacts were recovered from surface finds, shovel tests, and the test unit.

Vegetation at the site is a mix of pine and hardwood with a scrub oak understory. Surface visibility was non-existent, although two interior quartz flakes were collected (N190E205) from the back dirt of a fire break ditch which ran northward through the site. The site was encountered during routine shovel testing. One interior quartz flake was recovered on T97 from ST4 at a depth of about 25 cm.

Table 6.
Artifacts Recovered from Subsurface Collections at 31HT213*

	Flakes		Yadkin Pottery			UID
Unit	Metavolcanic	Quartz	FI	P	CM	Pottery
T97, ST4	1					
N170E190	4					
N170E200	6					
N180E190						1
N180E200	3	1				
N180E210						1
N190E190	1					
N190E205		2				
N190E210	1	2				
N200E190	1		1			
N200E210	4	2				
N210E200		2	1			
N210E210	2	5	1			
N220E200	2	1				
N220E210		2	6	15		
N230E210	2					
N240E200		1				
N240E200	2					
N250E210	3				8	
N260E210		1				
TU4, 0-10 cm				2		
TU4, 10-20 cm	1					
TU4, 20-30 cm	10					
TU4, 30-40 cm	9	1				

FI = fabric impressed, P = plain, CM = cord marked, UID = unidentified

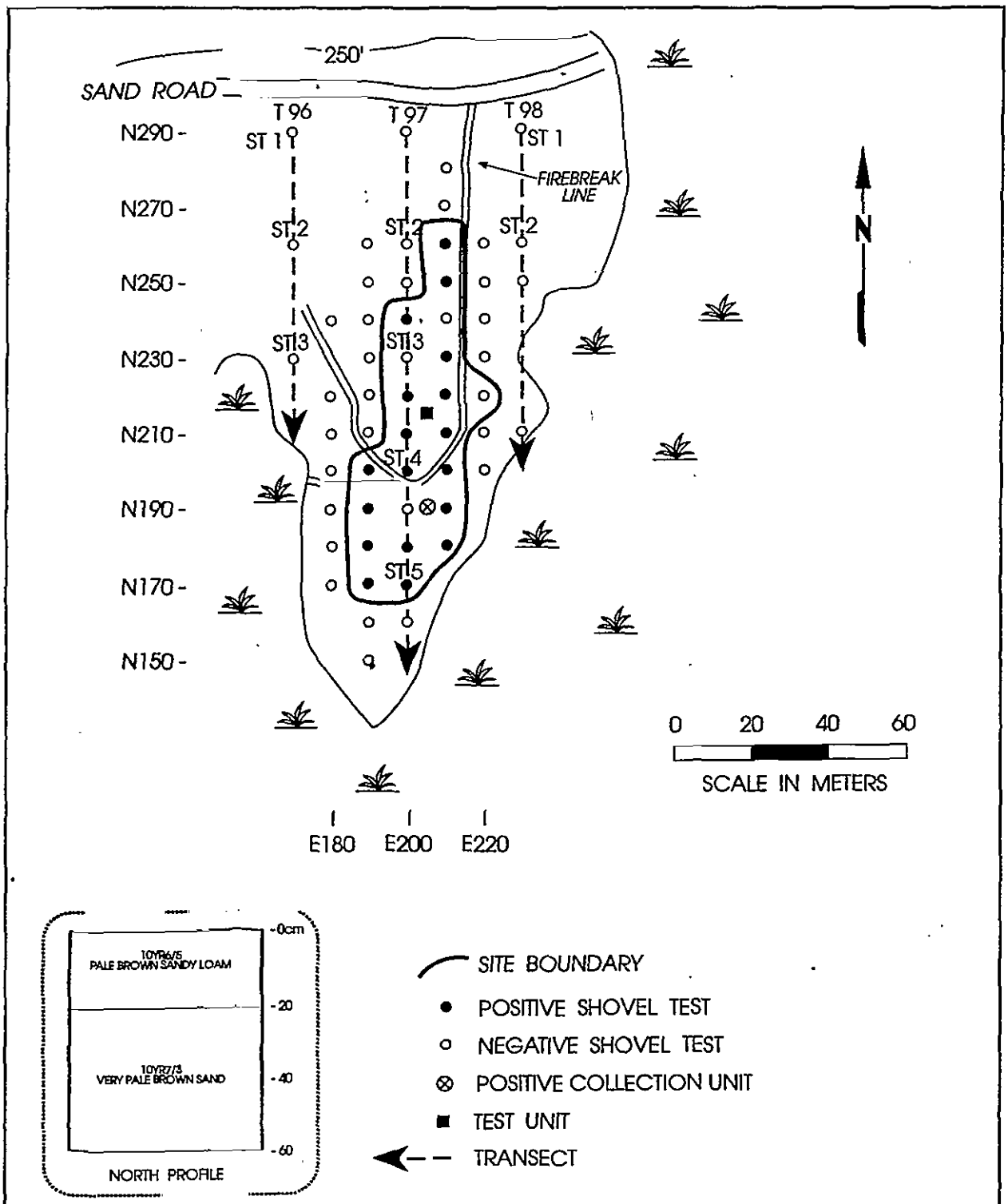

Figure 53. Map of 31HT213 and test unit profile.

Once encountered, 50 additional shovel tests were excavated, at 10 m intervals, in cardinal directions from the original positive shovel test (T97, ST4). This number included three routine shovel tests along Transects 97 and 98. All shovel tests were excavated to a minimum depth of 60 cm to 75 cm and one, N260E210, exceeded 1.20 m in depth. Of the 50 total shovel tests 18 (36%) yielded subsurface remains. Recovered from close interval testing were 83 artifacts, including one interior metavolcanic utilized flake, 20 interior metavolcanic flakes, 25 interior quartz flakes, three quartz raw materials weighing 25.20 g, and 34 sherds (Table 6). The utilized flake measures 29.92 mm in length, 38.03 mm in width, and 14.31 mm in thickness.

A 50 cm test unit was placed in a location which exhibited the highest density and range of artifact types to a depth of 60 cm. A total of 24 artifacts were recovered from the test unit. Two small plain Yadkin Period sherds were recovered from a depth of 0 to 10 cm. One interior metavolcanic flake was recovered from a depth of 10 to 20 cm. Eleven artifacts (10 interior metavolcanic flakes and one interior quartz flake) were recovered from a depth of 20 to 30 cm. Ten artifacts (nine interior metavolcanic flakes and one interior quartz flake) were recovered from 30 to 40 cm in depth. The soil profile of the test unit revealed pale brown (10YR 6/3) sandy loam to 15 cm overlaying 40 cm of very pale brown (10YR 7/3) sand (Figure 53). The soils for this site are identified as Bibb sands, although excavations determined that the profiles evidence a great deal of soil loss.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. Although 19 of the 50 excavations (36%) produced artifacts over half (50.69%) of these were non-diagnostic lithic debitage. No evidence of features was encountered during testing. The varying depths from which artifacts were recovered, 25 cm to 1.0 m, would indicate a great deal of soil loss. This is most likely in the form of slumpage from the rise to the north or from periodic flooding of the site.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site *can* provide, primarily on settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT213* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT214*

To arrive at site 31HT214* one must proceed from the intersection of Madison Briar Road and McRae Ride Road northeast down the fire break road to the northwestern boundary of the survey area. The Fort Bragg Military Reservation boundary road then turns east, then north. Continue past another fire break road that turns to the right down a valley and up the hill to Stove Road. Turn right on Stove Road and proceed to the drainage. The site is located 260 m south of Stove Road and borders on the northern edge of Muddy Creek. The central UTM coordinates are N3902940 E675770. The site is located on a terrace which exhibits a 5 to 15% slope to the north. In terms of a permanent water source, the main channel of Muddy Creek lies approximately 30 m to the east. The site is situated at an elevation of about 75 m and shovel testing revealed that the site measures approximately 45 m north-south by 35 m east-west making the site approximately 835 m^2 in size (Figure 54). A total of 44 artifacts were recovered from shovel tests and the test unit. Vegetation at the site is a mix of pine and hardwood with a scrub oak understory. Surface visibility was non-existent and no surface collections were made. Two positive shovel tests were encountered during routine shovel testing. One interior metavolcanic flake and one interior quartz flake were recovered on T99 from ST16 at a depth of about 45 cm. Three interior metavolcanic flakes and one interior quartz flake were recovered from ST17 on T99 at a depth of about 30 to 40 cm.

Once encountered, 28 additional shovel tests were excavated, at 10 m intervals, in cardinal directions from the original positive shovel test

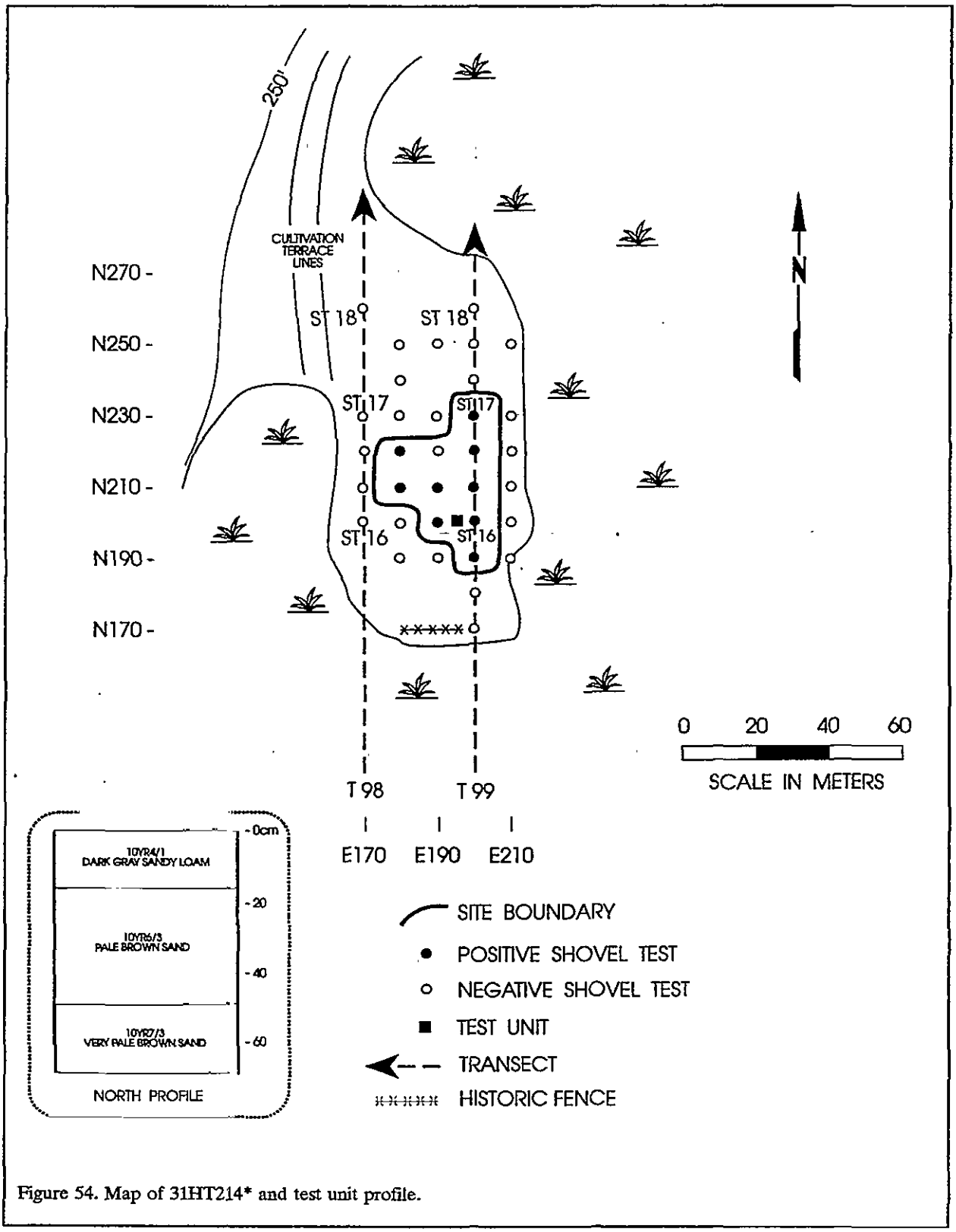

Figure 54. Map of 31HT214* and test unit profile.

Table 7.
Artifacts Recovered from
Subsurface Testing at 31HT214

Unit	Flakes		RM
	Metavolcanic	Quartz	
T99, ST16	1	1	
T99, ST17	3	1	
N190E200	2	6	
N200E190			1
N210E180	1	1	
N210E190	3		
N210E200		1	
N220E180		1	
N220E200	1		
TU5, 0-10 cm		1	
TU5, 20-30 cm	3	1	
TU5, 30-40 cm	5	4	1

RM = raw material

(T99, ST16). In addition, four shovel tests excavated during routine shovel testing along Transects 98 and 99 were negative. All shovel tests were excavated to a depth of 10 cm to 75 cm. Of the 32 total shovel tests, seven (21.88%) yielded subsurface remains. Recovered were 23 artifacts, including 11 interior metavolcanic flakes, 11 interior quartz flakes, and one quartz raw material, which weighed 14.63 g (Table 7). All artifacts recovered came from approximately 30 to 60 cm in depth.

A 50 cm test unit was located within the southern portion of the site in an area containing the highest density of artifacts and excavated to a depth of 70 cm. A total of 21 artifacts were recovered from the test unit. One interior quartz flake was recovered from a depth of 0 to 10 cm. Three interior metavolcanic flakes and one interior quartz flake were recovered at a depth of 20 to 30 cm. Five interior metavolcanic flakes, four interior quartz flakes, and one quartz raw material, which weighed 13.72 g, were recovered from the 30 to 40 cm level, and five interior metavolcanic flakes and one interior quartz flake were recovered from a depth of 40 to 50 cm. The soil profile of the test unit was a dark gray (10YR 4/1) sandy loam to 16 cm overlaying 34 cm of pale brown (10YR 6/3) sand, over a very pale brown (10YR 7/3) sand (Figure 54). The soils for this site are identified as Bibb soils. Although the A horizon is similar in nature to the typical Bibb soil profile, it is thinner than expected. Below the A horizon there is no consistency in the soil profiles.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. Although seven of the 32 excavations produced artifacts, the data sets are limited to debitage. No evidence was encountered of features. All of the specimens were found between 25 cm and 50 cm. The presence of a degraded modern fence line along with the presence of terracing for cultivation purposes would suggest that this site has been clear cut and cultivated in the past. From the terracing along the southeastern slope, it is obvious that erosion/deflation was a continuing problem in the past. This again provides evidence that even the relatively protected, wooded areas of Fort Bragg may have significant soil loss.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site *can* provide, primarily on settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT214* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT215*

To arrive at site 31HT215* one must proceed from the intersection of Madison Briar Road and McRae Ride Road northeast down the fire break road to the northwestern boundary of the survey area. The Fort Bragg Military Reservation boundary road then turns east, then north. Continue past another fire break road that turns to the right down a valley and up the hill to Stove Road. Turn right on Stove Road and proceed through the drainage, past another fire break road to the right. The site is located 60 m north of this last fire break road and 30 m east Stove Road. The central UTM coordinates are N3903630 E676300. The site is located on a terrace

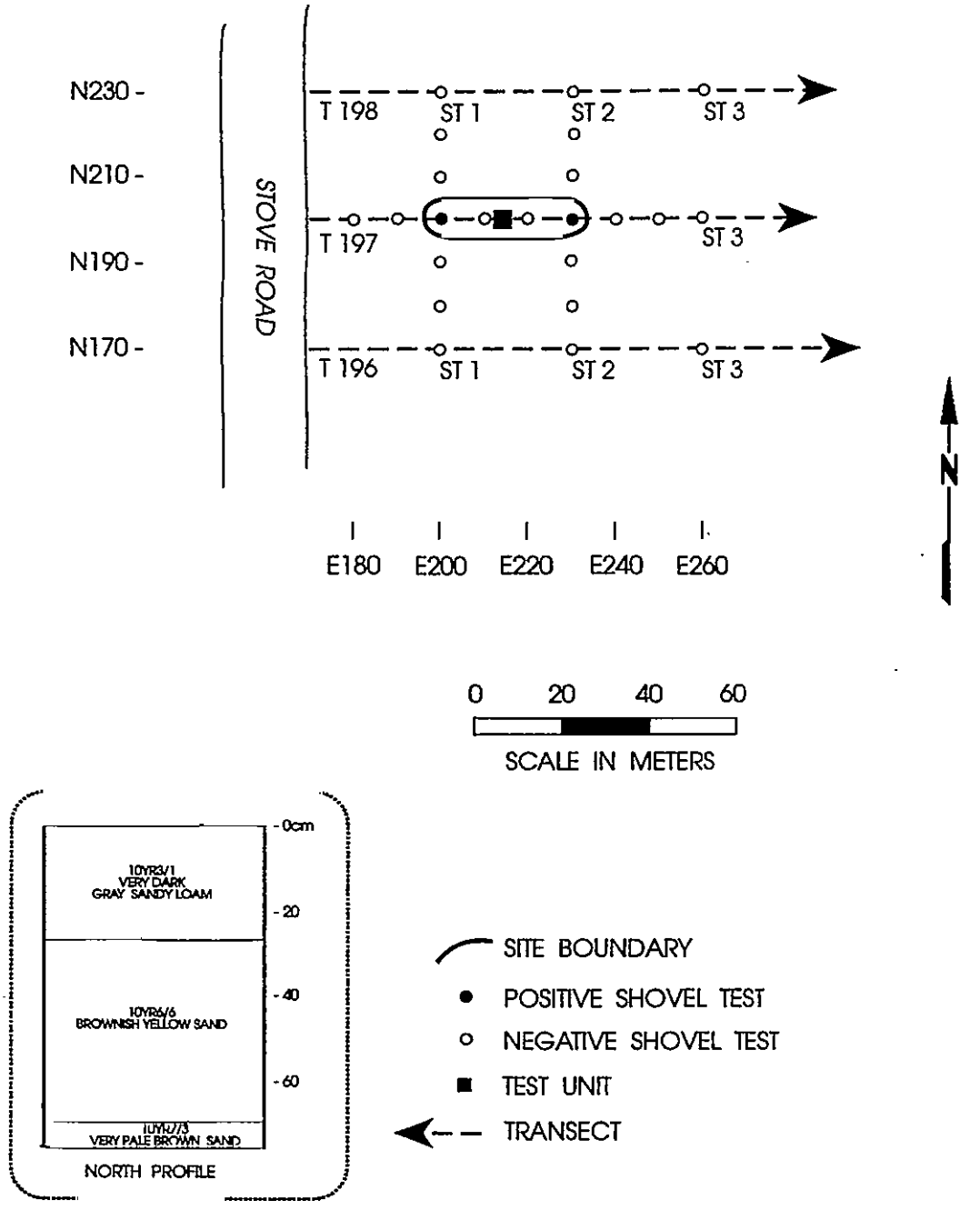

Figure 55. Map of 31HT215* and test unit profile.

which exhibits a 5% slope to the northeast. In terms of a permanent water source, the main channel of Muddy Creek lies approximately 390 m to the southwest. The site is situated at an elevation of about 83 m and shovel testing revealed that the site measures approximately 10 m north-south by 35 m east-west making the site approximately 325 m^2 in size (Figure 55). Ten artifacts were recovered from shovel tests and the test unit.

Vegetation at the site is a mix of pine and hardwood with a scrub oak understory. Surface visibility was non-existent and no surface collections were made. Two positive shovel tests were encountered during routine shovel testing. Two interior metavolcanic flakes and four interior quartz flakes were recovered on T197 from ST1 at a depth of about 50 cm. One interior metavolcanic flake and one interior quartz flake were recovered on T197 from ST2 at a depth of about 30 to 40 cm.

Once encountered, 12 additional shovel tests were excavated, at 10 m intervals, in cardinal directions from the original positive shovel test (T197, ST1). In addition, one positive shovel test (T197, ST2) was excavated during routine shovel testing. All shovel tests were excavated to a depth of 60 cm to 75 cm and other than the two mentioned above none yielded subsurface remains. Of the 14 shovel tests two (14.3%) yielded subsurface remains. Eight artifacts were recovered during routine shovel testing. These included two interior metavolcanic flakes and four interior quartz flakes recovered from ST1 and one interior metavolcanic flake and one interior quartz flake recovered from ST2.

A 50 cm test unit was located between the two positive shovel tests and excavated to a depth of 70 cm. Two interior quartz flakes were recovered from a depth of 40 to 50 cm. The soil profile of the test unit was a very dark gray (10YR 3/1) sandy loam to 26 cm overlaying 44 cm of brownish yellow (10YR 6/6) sand (Figure 55). The soils for this site are identified as Gilead sands. It is interesting to note that the test unit, although fairly consistent with the typical Gilead profile, contains a much deeper band of A horizon soils, coupled with a more shallow E horizon.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. Like previous sites, the data sets at 31HT215* are limited to debitage. No evidence was encountered of features. All of the specimens were found between 30 cm and 50 cm in depth. The rather wide band of A horizon soils along with the smaller band of underlying E horizon soils suggests the possibility that this area was once heavily cultivated and that since the ground has lain fallow that periodic flooding from the drainage to the southeast has assisted in the deposition of fresh topsoil. This would suggest possible mixing of materials from the upper A horizon with the lower E horizon soils.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site *can* provide, primarily on settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT215* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT225*

Site 31HT225* is located 90 m south of Scotchman Road at UTM coordinates N389695 E677228. The site is located on an upland ridge with a 5% slope to the north and northeast. The slope north increases toward Jumping Run Creek, located 50 m north of the site. The most permanent water source is Jumping Run Creek. The site is situated at an elevation of about 70 m and the shovel testing revealed that the site measures about 40 m north-south by 85 m east-west making the site approximately 1,332 m^2 in size (Figure 56). A total of 24 artifacts were recovered from shovel tests and the test unit.

Vegetation at the site is a mix of pine and hardwood with a scrub oak understory. Surface visibility was non-existent and no artifacts were collected from the surface. Two positive shovel

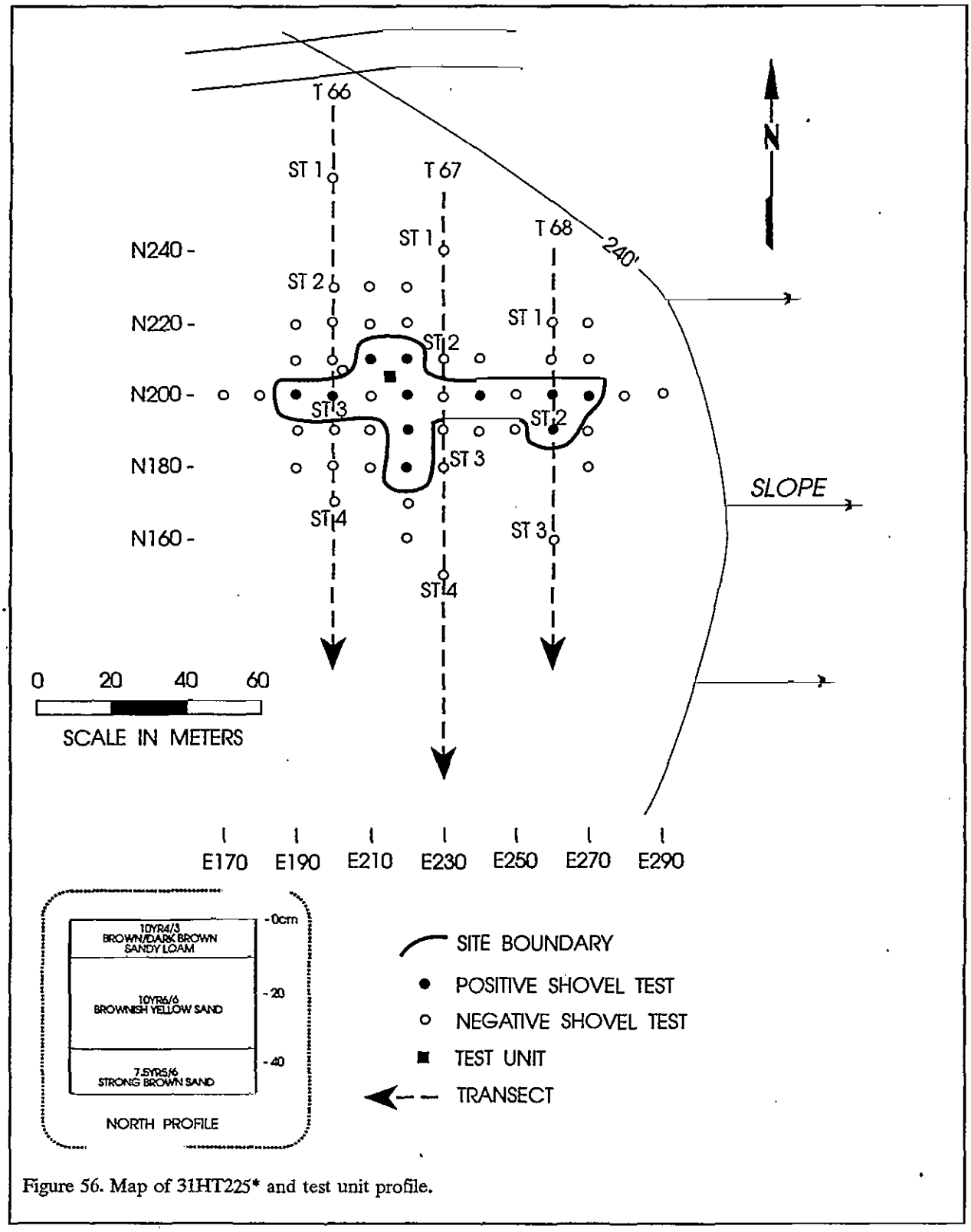

Figure 56. Map of 31HT225* and test unit profile.

tests were encountered during routine shovel testing. One interior quartz flake was recovered on T66 from ST3 at a depth of about 50 cm. Two interior quartz flakes were recovered on T68 from ST2 at a depth of about 30 to 40 cm.

Once encountered, 41 additional shovel tests were excavated, at 10 m intervals, in cardinal directions from the original positive shovel test (T66, ST3). All shovel tests were excavated to a depth of 60 cm to 75 cm. Of the 47 shovel tests, ten (21.3%) yielded subsurface remains. These included one primary metavolcanic flake, 12 interior metavolcanic flakes, and one metavolcanic biface (Table 8). The biface is 83.34 mm in length,

Table 8.
Artifacts Recovered from Subsurface Testing at 31HT225

	Flakes		
Unit	Metavolcanic	Quartz	Biface
T66, ST3		1	
N180E210		1	
N190E220		4	
N190E260	1	1	
N200E190	1		
N200E220	2		
N200E240		1	
N200E260		2	
N200E270	5		
N210E210	2		1
N210E220	1		
TU5, 20-30 cm	1		

35.64 mm in width, and 14.32 mm in thickness. All of the artifacts were recovered from approximately 20 to 50 cm below ground level.

A 50 cm test unit, located within the highest concentration of positive shovel tests and artifact density, was excavated to a depth of 50 cm. Only one artifact, an interior metavolcanic flake, was recovered from the test unit. This came from a depth of 20 to 30 cm. The soil profile of the test unit was a brown to dark brown (10YR 4/3) sandy loam to 10 cm overlaying 25 cm of brownish yellow (10YR 6/6) sand, over a strong brown (10YR 5/6) sand (Figure 56). The soils for this site are identified as Wakulla sands. This is entirely consistent with the recovered soil profile where an A horizon overlays a deep E horizon, overlying a recursive B horizon.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. Only ten of the 47 excavations produced artifacts and the data sets are limited to debitage. No evidence was encountered of features. All of the specimens were found between 20 cm and 50 cm. This suggests possible inclusions or the mixing of materials from a lower level with the upper E horizon soils.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics (Townsend et al. 1993:32). The information the site *can* provide, primarily on settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31HT225* as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

31HT231**

Site 31HT231** is located 90 m northeast of the intersection of Garland Almond Road and Fort Bragg Fire Break 5. The central UTM coordinates are N3899840 E677550. The site is located on a slight upland slope which drops approximately 2% to the northeast. The nearest source of water is a drainage of Jumping Run Creek located 150 m to the northeast. The nearest source of permanent water is Jumping Run Creek which lies approximately 1.65 km northwest of the site. The elevation of the site is 100 m and based on the shovel testing the site is estimated to measure about 70 m north-south by 45 m east-west making the site approximately 2,100 m^2 in size (Figure 57). The shovel tests yielded 22 artifacts.

Vegetation at the site is a mix of pine and hardwood with scrub oak understory. Although surface visibility was poor, four artifacts were recovered from the surface during close interval testing. These were collected at stations N190E185, N195E205, N230E205, and N230E215. The site

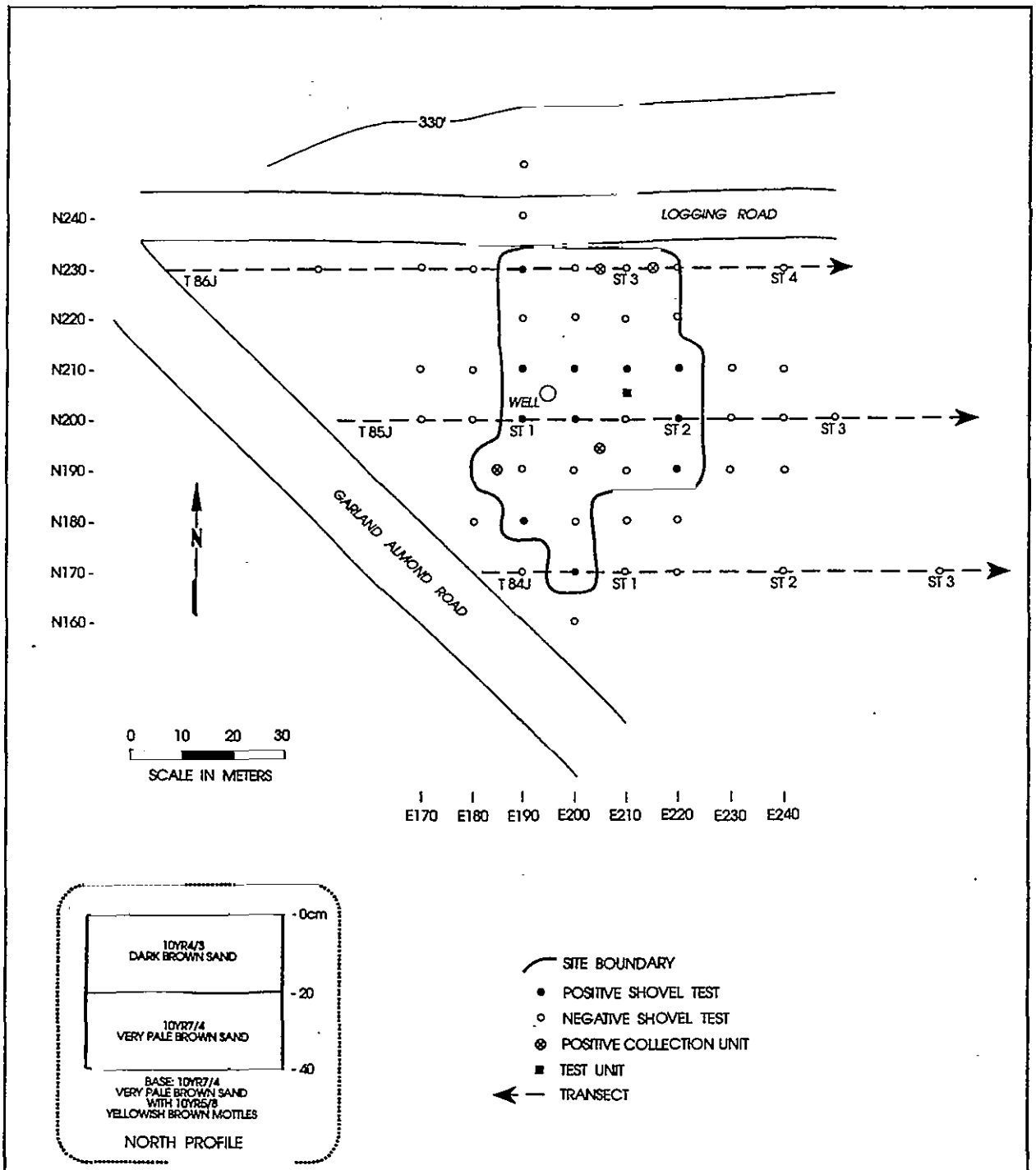

Figure 57. Map of 31HT231** and test unit profile.

was initially encountered through the recovery of one blue transfer printed whiteware on T85 from ST1. Forty-four additional shovel tests were excavated at 10 m intervals in cardinal directions from the original positive test. Each was taken to a depth of 40 to 60 cm. Ten of these yielded additional materials, including creamware, pearlware, whiteware, stoneware, "black" bottle glass, cut and wrought nails, as well as a ca. 1909 wagon hub (Table 9).

Table 9.
Artifacts Recovered from Subsurface Collections at 31HT231**

Unit	Count	Description
T84, ST1	1	blue transfer print whiteware
N170E200	1	alkaline glaze stoneware
N180E190	1	burnt pearlware
N190E185	1	burnt whiteware
N190E220	1	"black" bottle glass
N195E205	1*	chicken wire
N200E190	1	undecorated creamware
N200E220	1	burnt earthenware
N210E190	2	"black" bottle glass
	1	undecorated whiteware
N210E200	1	hand wrought nail, 3d
N210E210	5	asbestos shingle fragments (12.56 g)
N210E210	1	brick fragment (9.64 g)
N230E190	1	bolt fragment
N230E205	1*	Bristol slip stoneware
N230E215	1*	wagon hub
TU5 00-10 cm	1	undecorated creamware
TU5 10-20 cm	1	cut nail fragment
	2	annular pearlware
	1	alkaline glaze stoneware

* = surface find

A 50 cm test unit was located within the highest concentration of artifacts and excavated to a depth of 40 cm. One whiteware ceramic was recovered from a depth of 0 to 10 cm and 2 annular pearlware ceramics, one stoneware fragment and one cut nail were recovered from a depth of 10 to 20 cm. The soil profile of the test unit revealed a dark brown (10YR4/3) sand to 20 cm overlaying 20 cm of very pale brown (10YR7/4) sand (Figure 57). The soils from this site are identified as Blaney sands. It appears that not only does the site exhibit at least 10 cm of erosion, but there has been mixing or homogenization of the lower portion of the upper A horizon with the upper portion of the lower E horizon soil.

The artifacts recovered during testing indicate a domestic site originating sometime in the late eighteenth or early-nineteenth century and extending to perhaps the early twentieth century. The mean ceramic date for the site, 1826, is shown in Table 10. This table also provides information concerning manufacturing date ranges for the various ceramics.

It's probable that these remains are those of a dispersed farmstead. As previously mentioned, the exploration of historic settlement in the Fort Bragg area should be a priority. However, this site does not appear to possess either the data sets, or integrity, necessary to address these issues (Townsend et al. 1993:32). The information the site *can* provide, primarily on Sandhill settlement patterns and association with environmental zones, has been recovered through the current survey. Consequently, site 31HT231** is recommended as not eligible for inclusion on the National Register of Historic Places.

Table 10.
Mean Ceramic Date for Site 31HT231**

Ceramic	Date Range	Mean Date (xi)	# (fi)	xi x fi
Creamware, undecorated	1762-1820	1791	2	3,582
Pearlware, blue transfer print	1795-1840	1818	1	1,818
annular	1790-1820	1805	2	3,610
Whiteware, undecorated	1813-1880	1860	3	3,720
blue transfer print	1831-1865	1848	1	1,848
			9	16,438

16,438 ÷ 9 ≈ 1826

Isolated Occurrences

These investigations produced a small number of what are termed "isolated occurrences," or materials found from single shovel tests on transect surveys. In each case the initial finding was treated as a site and a minimum of two additional shovel tests were excavated off the positive shovel test in cardinal directions. Consequently, for each isolated occurrence there was an initial positive shovel test and a minimum of eight negative tests.

Had additional positive tests, or surface material, been found, these occurrences would have been elevated to sites. Since no further material was found, they remain as isolated finds.

Detailed individual site maps are not provided, since in every case such maps would be of no assistance in re-locating the site, establishing its boundaries, or understanding its setting. We have provided small scale sketch maps, however, to help the reader better understand the testing methodology. These occurrences have been given site numbers and are shown on Figures 58 through 61.

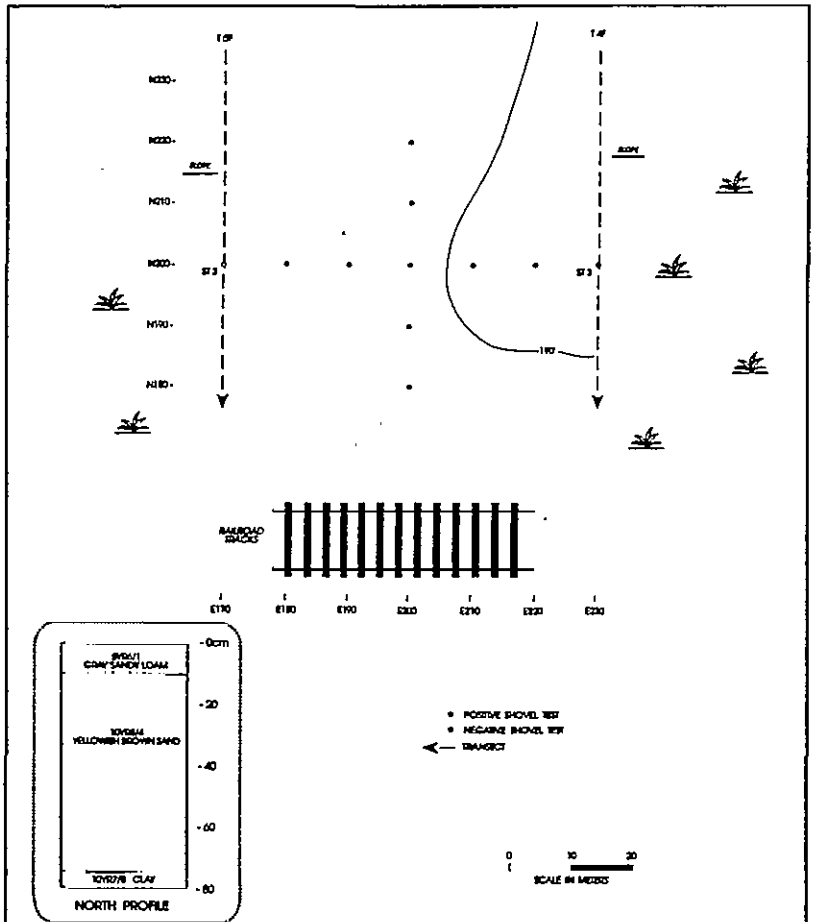

Figure 58. Map of 31CD529* isolated occurrence and shovel test pit profile.

All of these isolated occurrences, by definition, are normally considered not eligible for inclusion on the National Register of Historic Places by the State Historic Preservation Office and we are in concurrence with this assessment for each site.

31CD529*

One interior metavolcanic flake was recovered 30 m west of T4 ST3 at a depth of approximately 60 cm below surface (Figure 58). Close interval testing in cardinal directions was performed at 10 m intervals. None of the eight shovel tests yielded any artifacts. The central UTM coordinates of this occurrence are N3888610 E684845.

Site 31CD529* is located 90 m south of Knox Road and situated upon a slight knoll between two drainages. The occurrence was located by moving off transect to the center of the knoll which rises between two shallow drainages. The area is wooded with mixed hardwoods and pine. Surface visibility is approximately 5%.

31HT216*

One interior quartz flake was collected at T11 from ST8 (Figure 59). Close interval testing

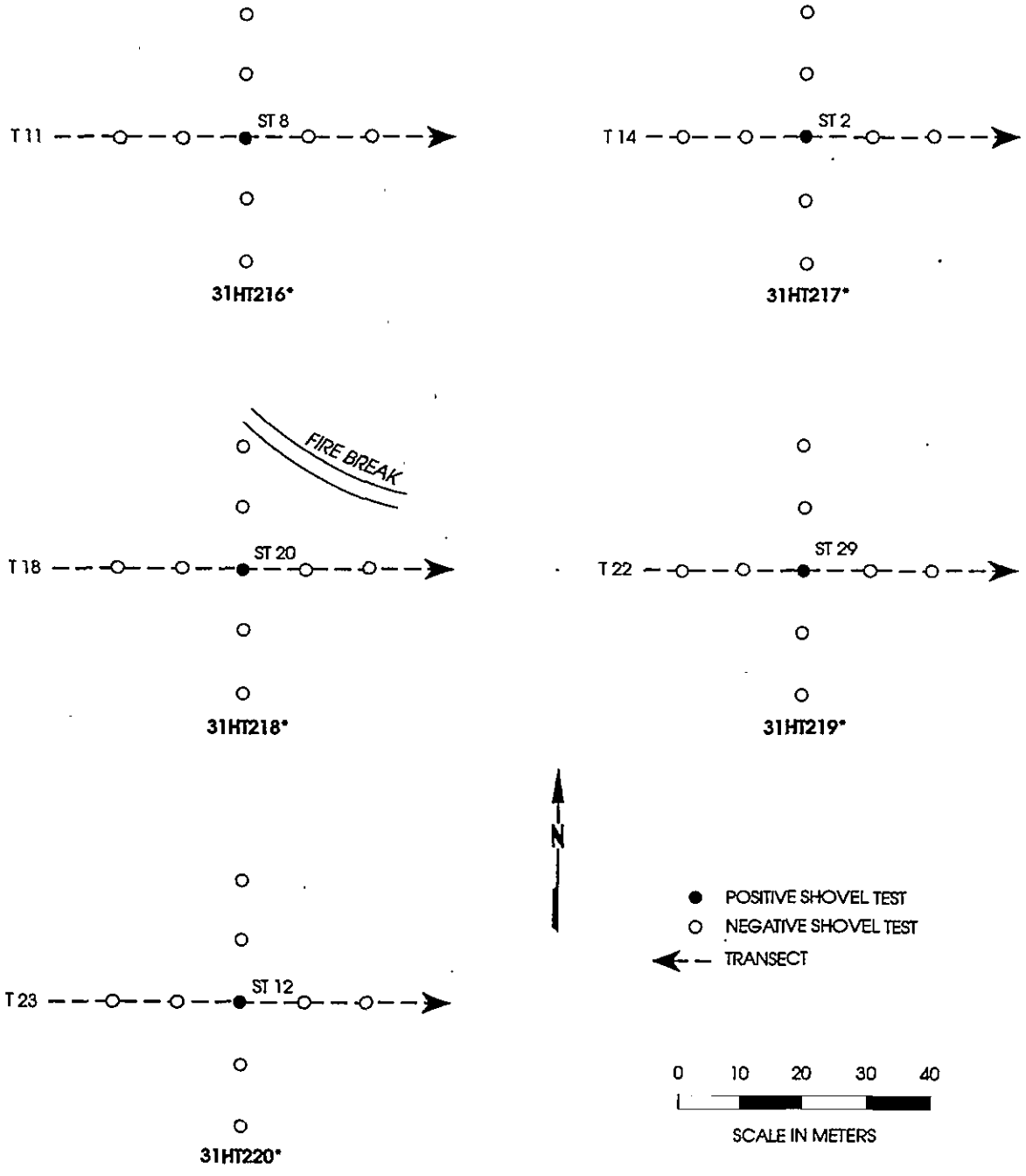

Figure 59. Map of isolated sites, Fort Bragg general survey tract "H".

was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3901071 E674250.

Site 31HT216* is located 300 m down a fire break road northwest of the intersection of Madison Briar Road and McRae Ride Road and 240 m east of the fire break road. The occurrence was found east of a ridge top on a gentle eastern slope toward a drainage of Muddy Creek. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 2%.

31HT217*

One interior quartz flake was collected at T14 from ST2 (Figure 59). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight shovel tests yielded any artifacts. The central UTM coordinates are N3901071 E674250.

Site 31HT217* is located 420 m down a fire break road northwest of the intersection of Madison Briar Road and McRae Ride Road and 60 m east of the fire break road. The occurrence was found east of a ridge top on a gentle eastern slope toward a drainage of Muddy Creek. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 2%.

31HT218*

One interior quartz flake was collected at T18 from ST20 (Figure 59). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight shovel tests yielded any artifacts. The central UTM coordinates are N3901390 E674706.

Site 31HT218* is located 540 m down a fire break road northwest of the intersection of Madison Briar Road and McRae Ride Road and 600 m east of the fire break road. The occurrence was found on a gentle northern slope which rapidly descends toward a drainage of Muddy Creek. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 2%.

31HT219*

One interior quartz flake was collected at T22 from ST29 (Figure 59). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3901580 E675005.

Site 31HT219* is located 660 m down a fire break road northwest of the intersection of Madison Briar Road and McRae Ride Road and 870 m east of the fire break road. The occurrence was found east of a ridge top on a gentle eastern slope toward a drainage of Muddy Creek. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 2%.

31HT220*

One interior metavolcanic flake was collected at T23 from ST12 (Figure 59). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight shovel tests yielded any artifacts. The central UTM coordinates are N3901479 E674370.

Site 31HT220* is located 690 m down a fire break road northwest of the intersection of Madison Briar Road and McRae Ride Road and 360 m east of the fire break road. The occurrence was found in a low area which rises to the west, south and east and descends north toward a drainage of Muddy Creek. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 2%.

31HT221*

One interior quartz flake was collected at T 31 from ST2 (Figure 60). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3898270 E676070.

Site 31HT221* is located 720 m southeast of the intersection of Scotchman Road and Garland Almond Road and 60 m east of McRae Ride Road. The occurrence was found on a ridge

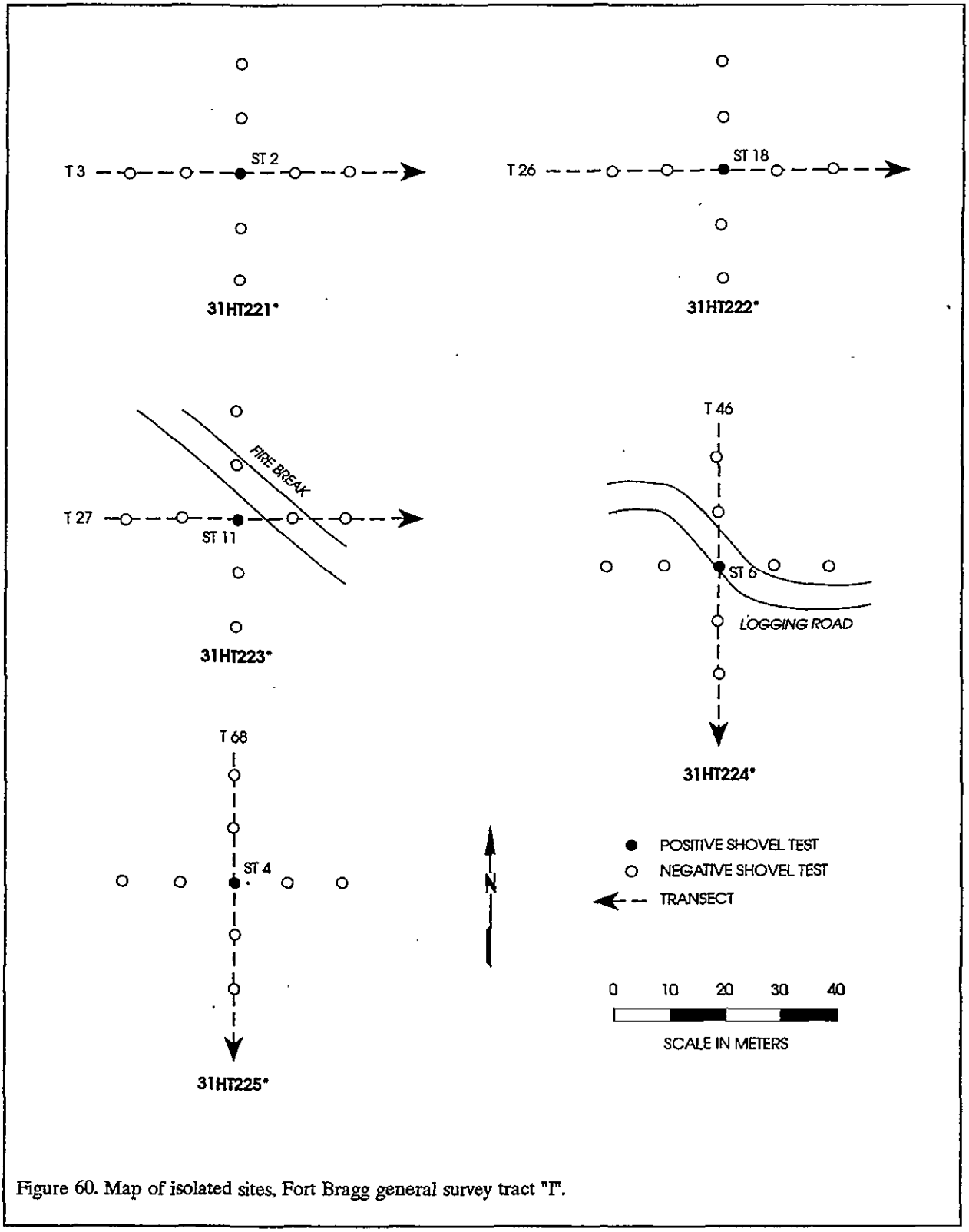

Figure 60. Map of isolated sites, Fort Bragg general survey tract "I".

top which slopes toward a drainage of Jumping Run Creek. The area is wooded with mixed hardwoods and farm pine which has been recently logged. Surface visibility is approximately 2%.

31HT222*

One interior quartz flake was collected on T26 ST18 (Figure 60). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3899000 E676045.

Site 31HT222* is located 540 m east of McRae Ride Road and 40 m south of the intersection of Scotchman Road and Garland Almond Road. The occurrence was found on a ridge top which gently slopes to the northeast toward a drainage of Jumping Run Creek. The area is wooded with mixed hardwoods and farm pine which has been recently logged. Surface visibility is approximately 5%.

31HT223*

Two interior quartz flakes were collected on T27 from ST11 (Figure 60). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3898990 E675810.

Site 31HT223* is located 330 m east of McRae Ride Road and 30 m southeast of the intersection of Scotchman Road and Garland Almond Road. The occurrence was found on a ridge top which rapidly slopes to the north and east toward a drainage of Jumping Run Creek. There is a rise to the south and west. The area is wooded with mixed hardwoods and farm pine and has been recently been logged. Surface visibility is approximately 2%.

31HT224*

One interior quartz flake was collected on T46 from ST6 (Figure 60). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3899048 E676565.

Site 31HT224* is located 180 m south of Garland Almond Road and 1,230 m northeast of the intersection of Scotchman Road and Garland Almond Road. The occurrence was found on a ridge top which rapidly slopes to the northeast toward a drainage of Jumping Run Creek. There is a gentle rise to the south. The area is wooded with mixed hardwoods and farm pine, most of which have been recently logged. Surface visibility is approximately 2%

31HT226*

One interior quartz flake was collected on T68 from ST4 (Figure 60). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3899610 E677240.

Site 31HT226* is located 120 m south of Garland Almond Road and 1,980 m northeast of the intersection of Scotchman Road and Garland Almond Road. The occurrence was found on a ridge top which gently slopes to the north and east toward a drainage of Jumping Run Creek. The area is wooded with mixed hardwoods and farm pine which has been recently logged. Surface visibility is approximately 5%.

31HT227*

Two interior quartz flakes were collected on T49 from ST17 (Figure 61). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3896680 E675138.

Site 31HT227* is located 510 m east of Williamson Road and 510 m north of the Cumberland-Harnett county line. The occurrence was found on a ridge top which gently slopes to the east toward a drainage of the Lower Little River. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 2%.

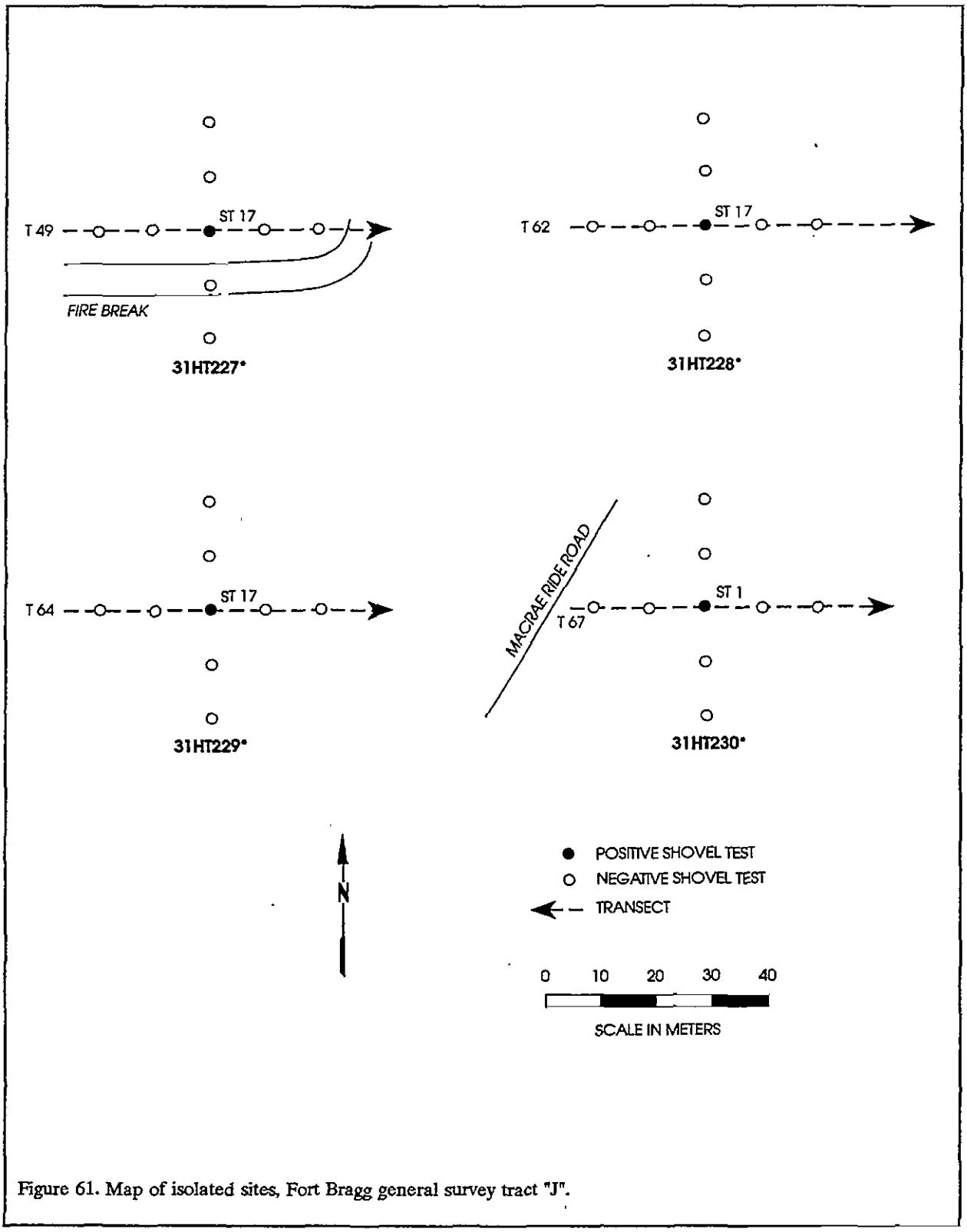

Figure 61. Map of isolated sites, Fort Bragg general survey tract "J".

31HT228*

Two interior quartz flakes were collected on T62 from ST17 (Figure 61). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3897120 E675260.

Site 31HT228* is located 510 m east of McRae Ride Road and 960 m north of the Cumberland-Harnett county line. The occurrence was found on a ridge toe which rapidly slopes to the north, south, and east toward a drainage of the Lower Little River. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 5%.

31HT229*

Four interior metavolcanic flakes and one interior quartz flake were collected on T64 from ST17 (Figure 61). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3897180 E675290.

Site 31HT229* is located 510 m east of McRae Ride Road and 1,020 m north of the Cumberland-Harnett county line. The occurrence was found on a ridge toe which rapidly slopes to the north, south, and east toward a drainage of the Lower Little River. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 5%.

31HT230*

Four interior quartz flakes were collected on T67 ST1 (Figure 61). Close interval testing was conducted in cardinal directions at 10 m intervals. None of the eight additional shovel tests yielded any artifacts. The central UTM coordinates are N3897240 E674840.

Site 31HT230* is located 30 m east of McRae Ride Road and 1,080 m north of the Cumberland-Harnett county line. The occurrence was found on a ridge top which gently slopes to the east toward a drainage of the Lower Little River. The area is wooded with mixed hardwoods and farm pine. Surface visibility is approximately 5%.

CONCLUSIONS

Introduction

As a result of the intensive survey of the 29.57 ha Camp Mackall Special Forces Training Area at Camp Mackall and the 776.55 ha Fort Bragg general survey, 26 archaeological sites were recorded or revisited. Of these 26 sites 15 were isolated occurrences. Table 11 lists those sites currently identified. Of the resources recovered, one site, 31CD106**, is recommended as eligible for inclusion on the National Register of Historic Places. None of the other 25 are recommended as eligible for inclusion on the National Register of Historic Places.

The Camp Mackall Special Forces Training Area survey tract, which was primarily wooded with poor surface visibility, yielded a site density of .03 sites per km². No isolated occurrences were found and only one site was recovered in this survey tract

The findings from the Camp Mackall Special Forces Training Area survey tract are considerably lower than reported for the Camp Mackall Drop Zone approximately 3.5 km to the southeast, where 6.5 to 8.3 site per km² were found (Trinkley et al. 1996b:101) and for the Sicily Drop Zone on Fort Bragg proper, where 7.2 to 22.4 sites per km² were found (Trinkley et al. 1996a:135). The density from the Camp Mackall Special Forces Training Area survey tract is also below the average density of 10 sites per km² estimated by Loftfield (1979) or 11.3 sites per km² estimated by Abbott et al. (1995:35).

The very low density from the Camp Mackall Special Forces Training Area survey tract may be a reflection of a number of different factors. The most obvious would be that the current survey tract is not denuded of vegetation as was the Camp Mackall Drop Zone and Sicily Drop Zone at Fort Bragg. As other studies have suggested, the difference in site density may be a result of differing survey methods (Braley 1990:22; Trinkley et al. 1996b:103). Yet, much like those sites found within the southern portion of the Camp Mackall Drop Zone (Trinkley et al. 1996), the one site found during this study on the Camp Mackall parcel (31RH287*) was associated with a drainage of Drowning Creek located 650 m to the north. In previous studies conducted at Camp Mackall site density declined toward Drowning Creek (Trinkley et al. 1996b:105; Loftfield 1979). Consequently, topography and environmental conditions may be the determining factor of site density in this study area.

Turning to the Fort Bragg general survey tracts, this study found a total density of 1.3 sites per km² when the occurrences are excluded or 3.2 sites per km² when they are added. The density from the Northern Training Area studied by Braley (1989b) found an

Table 11.
Sites in the Camp Mackall SF Training Area and Fort Bragg Survey

Site #	Current Status	Site #	Current Status
Camp Mackall SF Training Area		31HT218*	NE - occurrence only
31RH287*	NE	31HT219*	NE - occurrence only
		31HT220*	NE - occurrence only
Fort Bragg General Survey		31HT221*	NE - occurrence only
31CD106**	E - relocated	31HT222*	NE - occurrence only
31CD528**	NE	31HT223*	NE - occurrence only
31CD529*	NE - occurrence only	31HT224*	NE - occurrence only
31HT210*	NE	31HT225*	NE
31HT211*	NE	31HT226*	NE - occurrence only
31HT212*	NE	31HT227*	NE - occurrence only
31HT213*	NE	31HT228*	NE - occurrence only
31HT214*	NE	31HT229*	NE - occurrence only
31HT215*	NE	31HT230*	NE - occurrence only
31HT216*	NE - occurrence only	31HT231**	NE
31HT217*	NE - occurrence only		

average density of 16.1 sites per km² as opposed to estimates by Loftfield (1979) of a density of 7.7 sites per km² (Braley 1990:22).

On the surface, it would appear that there is a significant difference between the site density determined by Braley (1990) in the Northern Training Area and what was recovered during the present survey. Although this difference seems substantial, we hoped that closer study of Braley's work would indicate that these differences are not as great as they seem.

When broken down into specific survey tracts a somewhat different picture of site density emerges for the Fort Bragg general survey. Survey tract "C" contained a site density 10.7 sites per km². Survey tract "F" contained a site density of 9.5 per km². Survey tract "H" contained a site density of 1.9 per km² when the occurrences are excluded or 3.5 per km² when they are added. Survey tract "I" contained a site density of 0.8 per km² when the occurrences are excluded or 5.0 per km² when they are added. Survey tract "J" contained a site density of 0.5 per km² when the occurrences are excluded or 2.3 per km² when they are added. Clearly some of these tracts are more divergent from our expectations than are others.

Braley (1990) surveyed a number of areas in close proximity to survey tracts "H", "I", and "J". This area is referred to as the Northern Training Area (Braley 1990:21). For purposes of this current study, Braley's survey tracts are listed as Area 1, Area 2, Area 3, and Area 4 (see Figure 28 and 29 for their general location in relationship to our study tracts). Area 1 is situated south of and adjacent to survey tract "I". Area two is situated north of and adjacent to survey tract "J". Area 3 is situated south of and adjacent to survey tract "H", whereas Area 4 is situated east of and adjacent to survey tract "H". Area 1 contained a total site density of 9.7 sites per km², whereas survey tract "I" contained 5.0 sites per km². Area 2 contained 3.4 sites per km², whereas survey tract "J" contained 2.3 sites per km². Areas 3 and 4 contained a total of 14.2 sites per km², whereas survey tract "H" contained 3.5 sites per km². When combined, the total site density of the four areas studied in Braley's (1989) survey is 11.3 sites per km², whereas the present survey suggests a site density in the Northern Training Area of 3.4 sites per km².

Although this area by area calculation reveals substantial differences in the number of sites per km² between Braley's (1989) survey and the present survey, only 49 of Braley's 123 sites (or 40%) sites were discovered through shovel testing (Braley 1990:20), whereas all of the sites recovered during the present survey were recovered through shovel testing.

When placed in the context of actual sites discovered per shovel test excavated, Braley discovered 49 sites during the excavation of 1,450 shovel tests or one site per 30 shovel tests. The current Chicora survey discovered 22 sites during the excavation of 1,566 shovel tests in the same general area as surveyed by Braley in 1990. This yields one site per 71 shovel tests excavated. Consequently, even when survey methodology is taken into consideration there remain substantial differences.

Discounting differences in methodology and holding constant calculation techniques, it seems that the only explanation for the differences may be micro-environmental factors. For example, reference to Figures 28 and 29 reveals that virtually all of Braley's sites were found on broad level areas on ridge side slopes overlooking small, intermittent drainages. These are the same topographic areas where sites were found in the current study (see, for example, Figures 46 and 47) and these environmental factors are discussed in greater detail below.

Stratified by environmental variables, it appears that Braley's (1989, 1990) North Training Area survey areas in close proximity to our study focused on tracts of high site probability. In contrast, our study included not only ridge side slopes overlooking small drainages, but also broad upland areas where no sites whatsoever were identified. This provides yet another suggestion that site density at Fort Bragg will be highly variable and will be heavily dependent on environmental variables, at least some of which are as yet poorly understood.

Moving on, in the present survey the bulk of the sites and occurrences within all survey tracts are prehistoric. Only three of the 26 sites (11.5%) do not have a prehistoric component. The majority of the prehistoric artifacts consist of quartz and metavolcanic lithic debitage. Only two tools were recovered and pottery is nearly as scarce. A total of 284 prehistoric artifacts were collected from the nine sites and 25 specimens were recovered from the 15 isolated occurrences.

The three historic sites would indicate a greater historic utilization of these study tracts than encountered in other studies. The diversity of the tracts associated with the Fort Bragg general survey, however, would preclude any conclusions concerning the extent of historic resources recovered during this survey. The current project revealed only sites dating, at the very earliest, from the late eighteenth through perhaps the late twentieth century. Other than site 31HT231** no early settlement in the Fort Bragg area has been encountered and the assembledges recovered appear to reflect either isolated refuse disposal or, at best, small tenant sites which have been heavily impacted by military activity. A total of 26 historic artifacts were recovered during these investigations.

Issues discussed in these conclusions include site attrition, site size and identification, prehistoric land use, site density, lithic resource use, artifacts, and general recommendations.

Site Attrition

Previous studies conducted at Camp Mackall (Trinkley et al. 1996b:102-106) and at Fort Bragg (Trinkley et al. 1996a:136-139) have pointed out the extraordinary attrition of archaeological resources present in the Fort Bragg — Camp Mackall area. The causes for this attrition have concentrated on human intervention, especially the collection of exposed materials, and the severe erosion that has been seen in the open and desert-like conditions of the drop zones. The present survey has determined that the impact of human intervention in areas of low surface visibility is not a significant issue, but site erosion continues to affect site attrition even in the wooded areas.

The impact of collecting in the Fort Bragg general survey tracts is considerably more difficult to assess than that found in the open drop zones located on base. All of the sites found during the present survey were discovered during the running of regular transects. Thus, in those areas that are wooded with low or no surface visibility, human intervention is not a significant concern.

Natural effects, however, appear to be as significant to our understanding of the resources in the Fort Bragg general survey tracts as they were to our studies at the Camp Mackall Drop Zone and the Sicily Drop Zone. As seen in the previous studies, the amount of soil loss, documented through the examination of soil profiles, is staggering.

As found in earlier studies, the single most common factor weighing against the eligibility of archaeological sites continues to be the lack of site integrity, attributable to soil loss or erosion. This problem is caused by a combination of the nature of the soils, soil loss due to impacts of logging operations within the base boundaries, past cultivation practices, and the nature of the military operations which take place on the bases.

There are substantial differences in total soil loss estimates for areas that have been logged, as well as the associated skid trails and logging roads required in logging operations. These estimates range from 22.78 t of soil loss per ha per year to 5.93 t of soil loss per ha per year. Yet, even if the lower estimates by Trimble (1974:25) for soil loss specific to the Carolina Sand Hills are used, we continue to observe a staggering amount of soil loss throughout Camp Mackall and Fort Bragg. These estimates would indicate that the Camp Mackall Special Forces Training Area survey tract has or will experience approximately 175.35 t of soil loss per year. At Fort Bragg, survey tract "H" has or will experience approximately 2,017.39 t of soil loss per year, survey tract "I" has or will experience approximately 546.51 t of soil loss per year, and that survey tract "J" has or will experience approximately 898.75 t of soil loss per year.

Although the present survey was conducted within areas that are presently wooded, soil loss, attributable to both clear cutting for cultivation purposes and logging operations, has been

documented at numerous sites. Soil profiles from site 31HT210* indicate that the entire Ap horizon has eroded, leaving the E horizon to occur at the surface. This was also found to be the case at site 31HT212*. The A horizon at 31HT214* was found to be perhaps 9 cm less than that anticipated for similar soils. This is similar in nature to the soil profile found at 31HT231** where Blaney sands are apparent. Erosion has played a major part in the soil profile of 31HT211*. Although the A horizon seems to be intact, the appearance of the B horizon 32 cm above the typical soil profile indicates that a substantial amount of erosion has occurred at this site with the subsequent creation of a new A horizon.

As in previous assessments, made for other areas within the base, the combination of factors affecting these sites has, and continues to, severely damage the research potential of these resources. In a similar manner, it is very important to understand the factors affecting both the previously gathered information and the current information, before evaluating the conclusions generated. Some data, such as site location, are valid since there has probably been little lateral movement of the artifacts (an exception to this may be erosion of materials downslope). Statements regarding the contents of these sites and how they reflect site function should be taken with caution.

As seen above, logging operations cause moderate to heavy damage to archaeological resources. The implementation of archaeological surveys prior to timber harvesting was suggested by Braley (1990:2:6). Although occasionally timber harvesting is done prior to archaeological research at Fort Bragg, a program for archaeological research prior to harvesting has been implemented and this is excellent. Coordination of timber harvesting and archaeological research is essential to the preservation and protection of these resources.

Site Size and Identification

Sites at the Camp Mackall Special Forces Training Area survey and those found in the Fort Bragg general survey range in size from small isolated occurrences of debitage in a 30 cm^2 area to large scatters of remains across several transects. Excluding occurrences, these sites range from 325 m^2 to 3,175 m^2 in size (Table 12). This range is considerably smaller than that found from either the Camp Mackall Drop Zone or the Sicily Drop Zone study.

Investigations of the Camp Mackall Drop Zone and Sicily Drop Zone study revealed that many of the sites identified in a denuded tract could never have been found through routine shovel testing (Trinkley et al. 1996b:103-104). It is interesting to note that the only site recovered in the heavily vegetated Camp Mackall Special Forces Training Area survey tract was discovered, not from shovel testing, but from a surface scatter within a cultivated field encountered while running transects. This may lend support to the conclusions drawn earlier concerning the survey and shovel testing of denuded tracts of land.

In the Fort Bragg general survey tracts surface visibility ranged from 0 to 10%, explaining the lack of surface collections from this survey. Surface collections occurred in two, or 25%, of the eight sites recovered if occurrences are excluded. If all the prehistoric archaeological resources (n=22) are identified in the Fort Bragg general survey tracts are considered then only 9.1% of the sites recovered contained surface collections. The two sites producing surface collections (31HT213 and 31HT231**) were found during routine shovel testing and the collected surface materials represent less than 2% of their total assemblage.

Loftfield (1979) established a number of parameters for predicting site locations. These included distance of the site from water, the elevation of the site above that water source, and the topographic situation of the site (Loftfield 1990:58). Although Braley (1990) used these parameters during his study of the Northern Training Area in 1990, he also included soil composition in his studies (Braley 1990:22).

Braley, while testing Loftfield's predictive model for site location, found that 59% of the sites located in the Northern Training Area were "within 100 m of a present-day water source" (Braley 1990:22). Although water is certainly a major factor in prehistoric site location, this study found only three, or 25% of the eight non-isolated occurrence sites recovered in the Fort Bragg general survey

tracts, were less than 100 m from a drainage. The remaining five sites, or 75%, averaged 334 m from a water source.

Only one site (31RH287*) was located in the Camp Mackall Special Forces Training Area survey tract. Topographically this site would be considered a lowland site. Two lowland sites (31HT213* and 31HT214*) were located in the Fort Bragg general survey, both found in Tract "H". Site 31RH287* was situated 30 m from a drainage, while sites 31HT213* and 31HT214* were situated 10 m and 20 m, respectively, from flowing water, The density of lowland non-isolated occurrence sites in area "H" is 0.6 sites per km². The remaining five sites would be considered in an upland context.

Topographically, upland sites were located in survey tracts "H", "I", and "J". Similar to suggestions by Loftfield (1990:58) and Braley (1990:22), all of these sites (31HT210*, 31HT211*, 31HT212*, 31HT215*, 31HT225*, and 31HT231*) were located either on a ridge, ridge nose, or upland terrace. Only one site (31HT210*) was situated within 100 m of an intermittent drainage. The remainder were all 150 m to 500 m from a water source.

Braley's (1990) study also determined that Woodland Period lowland sites tended to be more numerous than their upland counterparts (Braley 1990:21). According to Braley (1990) the site density per km² for upland sites was 15.0 per km² whereas for lowland site he found a site density of 17.4 km² (1990:23). Braley concluded that, "either the lowland sites were occupied by larger groups of people, or were more likely to be re-occupied on a seasonal basis" (Braley 1990:21). Approximately 52% of the sites recovered by Braley (1990:23) were lowland sites. Although only one site from this current work (31HT213*) can be definitively linked to the Woodland Period, it represents 12.5% of all sites recovered during the current survey

The data recovered by Chicora tends to support Loftfield's (1979) predictive model and Braley's (1990) refinement. It must be noted, though, that there are multiple factors involved with this model. Chicora determined that only 19.3% (n=5) of all sites located were within 100 m of some water source. Consequently, the dependence on one single factor in determining site location, such as distance to water, should be used with caution. As often as possible, multiple factors should be considered during analysis.

Prehistoric Land Use

The ability of this study to offer detailed observations on prehistoric land use is constrained by the relatively small number of sites encountered and a lack of diagnostic artifacts. We can not, for example, offer the level of detailed analysis provided by Loftfield's (1979) original study, the Sicily Drop Zone survey (Trinkley et al. 1996a), or even the Camp Mackall Drop Zone study (Trinkley et al. 1996b). Nevertheless, some general observations are appropriate.

The Camp Mackall area evidences greater environmental and topographic diversity than the Fort Bragg general survey tracts. To the east is the swamp associated with Drowning Creek, while to the south are the terraces and ridges overlooking Beaver Dam Creek. The northern portion of the Camp Mackall survey tract includes some broad expanses of upland soils, while the southern, or lower, portion of the tract is broken up by small drainage fingers from Beaver Dam Creek extending northward. This creates what we might expect to be a more hospitable environment for prehistoric people, since it offers greater environmental diversity and increased proximity to swamp ecotones.

There are four different soils present in this survey tract. Approximately one-half (46%) of the tract is moderately well drained Paxville soils. The second most common soils (33%) are poorly drained Pelion soils, with excessively well drained Candor-Wakulla soils (20%) and poorly drained Johnston soils (11%) comprising the remaining portions of the survey tract. The only site located in this tract (31RH287*) was situated on moderately well drained Paxville soils.

Turning to the Fort Bragg general survey tracts, these parcels represent a great amount of topographic relief but not much environmental diversity. As discussed in the environmental overview, survey tract "H", "I", and "J" are heavily

wooded areas. Numerous streams and drainages run through and border these tracts. The parcels contain sandy ridges or bluffs overlooking the drainages and creeks. In general, the ground may either gradually or rapidly slope into low drainages and associated troughs. Elevations range from 240 to 367 feet above mean sea level.

All are dominated by well drained soils. Tract "H" contains seven different soil series. Excessively, moderately, and well drained Blaney, Candor, Gilead, Vaucluse, and Wagram soils are the most common, accounting for 80% of the area. The remainder of the tract is comprised of poorly drained Bibb and Roanoke soils.

This survey area contains six sites and five isolated occurrences. Of the six sites, two (both in lowland areas) are associated with the poorly drained Bibb soils, two are associated with the well drained Blaney soils, and two are associated with excessively drained Candor soils. In other words all of the sites are found on soils which occur on slightly under half (44.1%) of the tract.

Only the two lowland sites (31HT213* and 31HT214*) are in a clear association with a permanent water source, Muddy Creek. The other four sites are some distance (360 to 500 m) from permanent water sources. There are no ridge noses or sandy bluffs overlooking broad expanses of river or creek swamp.

Survey tract "I" contains five different soil series. Excessively, moderately, and well drained Blaney, Candor, Gilead, and Wakulla soils are the most common, accounting for 98% of the parcel. The remainder of the tract is comprised of poorly drained Roanoke soils.

This survey tract contains one site and five isolated occurrences. The one site (31HT225*) was found in association with excessively well drained Wakulla soils (which comprise only 1.5% of the soils found in the tract) and is 360 m from a drainage of Jumping Run Creek. Again, there are no ridge noses or sandy bluffs overlooking broad expanses of river or creek swamp in this survey tract.

Survey tract "J" contains eight different soil series. Excessively, moderately, and well drained Blaney, Candor, Gilead, Vaucluse, and Wakulla soils are the most common, accounting for 88.1% of the area. The remainder of the tract is comprised of poorly drained Roanoke soils (9.1%). This survey area contains one site and four isolated occurrences. The one site encountered in this area (31HT231**) is a historic occupation. No prehistoric sites were identified.

As has been found in previous studies in the Camp Mackall and the Sicily Drop Zones, there are some topographic settings within survey tracts "H", "I", and "J" which were not used, in spite of their seemingly good locations. For example, the bluff area looking northeast over the drainage in survey tract "J," an excellent vantage point for prehistoric hunters, contained only two prehistoric isolated occurrences.

As with the previous Sicily Drop Zone survey, we see tremendous variation in the slope face selected. While Loftfield's (1979) reconnaissance found most sites associated with an east, north, and northeast slope face, he found the largest sites located on north or northeasterly facing slopes. In the Sicily survey (Trinkley et al. 1996a) slope face selection appears to have varied by drainage, with those on Jumping Run Creek most commonly on east or southeast slope faces and those on Deep Creek preferring a northwest slope face.

In the Camp Mackall Drop Zone study (Trinkley et al. 1996b) there is a clear preference for southern and southeastern exposures, which account for 60% of the sites. When southwestern facing sites are added, the composite accounts for nearly three-quarters of all sites.

The current study diverges from the previous studies, but is in more general agreement with Loftfield's findings. The one site from the Camp Mackall Special Forces Training Area faced westerly. Those sites located in survey tracts "H", "I", and "J" most commonly faced to the north or northeast. Southern exposures account for the remaining quarter of the sites.

According to Brown and Morgan (1983:24) there are a number of factors to consider when locating a camp site. For instance, southern

exposures provide the longest lasting heat and light and, of course, locating a camp on the east side of a ridge provides protection from the wind and blowing rain. This also provides quicker warmth during the morning hours.

What these findings mean, quite honestly, is impossible to ascertain with the current sample. One explanation may be that prehistoric people used a wide range of diverse topographic settings and the data are, essentially, meaningless. Another interpretation is that the Camp Mackall sites were predominately cool weather camps sited to take advantage of the warming sun. Yet another interpretation is that many were short-term hunting camps situated to take advantage of resources in the Muddy Creek and Jumping Run Creek drainage, with the prevailing winds (from the southwest) forcing the smell of the camps and their occupants away from the lowland prey. Although a simple answer is not (as yet) possible, the data being generated by the survey of a variety of relatively large landforms in the Fort Bragg and Camp Mackall area are very significant since they will allow questions such as this to be addressed in the future.

Site Density and Function

Table 12 provides a list of the archaeological sites, their components, size in m^2, and the density of artifacts per m^2 listed in order of size. Sassaman et al. (1990) suggest that the density of artifacts at prehistoric sites is a useful measure of the relative intensity of material discard at a site stating that the amount of discard is assumed to be proportional to the "cumulative duration of site occupation, and/or the total number of site occupants, and/or the intensity of activities from which discarded debris was generated" (Sassaman et al. 1990:223). Lithic tool manufacture, however, generates a large volume of debris which creates a bias on measures of occupation duration/intensity and Sassaman and his colleagues recommend calculating density for total assemblages and for artifacts other than debitage. Unfortunately, too few artifacts other than debitage are present at these sites so density based only on the total assemblage could be calculated. They warn that artifact density should only be calculated for subsurface assemblages with an adequate sample size. None of these conditions exist at any of the sites encountered and both surface and subsurface assemblages are combined. Because of these problems, other types of site analysis such as tool to debitage ratio and assemblage diversity were determined to be inappropriate with the collection obtained during this survey.

The total average size of all prehistoric sites (excluding isolated sites or occurrences) discovered was 1,186 m^2. Upland sites alone averaged 1,068 m^2 in size whereas lowland sites averaged 1,480 m^2 in size. Lowland sites are therefore about 28% larger than their upland counterparts, exceeding Braley's predictive model for site size.

An examination of Table 12 shows several things related to site density. First, the smaller sites (less than 1000 m^2) have a smaller range in artifact density (0.15 to 0.32 artifacts per m^2) than the larger sites (0.19 to 0.72 artifacts per m^2). The mean density for the smaller sites is also considerably lower (0.215 artifacts per m^2) than for the larger ones (0.48 artifacts per m^2).

These findings are exactly the opposite of what has been found in the Camp Mackall and Sicily Drop Zone surveys (Trinkley et al. 1996a, 1996b). In the Camp Mackall Drop Zone survey the mean for sites under 1000 m^2 was 0.16 artifacts per m^2, while the mean for the larger sites was 0.08 artifacts per m^2 (Trinkley et al. 1996b:107). In the Sicily Drop Zone study the mean for sites under 1,000 m^2 was 0.18 artifacts per m^2, while the mean for the larger sites was 0.03 artifacts per m^2 (Trinkley et al. 1996a:136). We are inclined to believe this represents bias inherent in the very small sample sizes recovered from the current study.

Consistent with the two prior studies, the current work found that the larger sites are more likely to contain diagnostic specimens. This is not surprising since they were likely used for more than just lithic reduction and for longer periods of time than most of the smaller sites.

In the previous Camp Mackall Drop Zone and the Sicily Drop Zone assemblages several of the sites with the highest artifact density contained

one or more Woodland components. The only Woodland Period site encountered during the present survey also exceeded 1,000 m². This and data from previous studies (Trinkley et al. 1996a, 1996b) suggests that Woodland Period sites exhibit a less mobile lifestyle and therefore longer-term use or multiple visits.

Table 12.
Prehistoric Site Artifact Density (sites listed by increasing size)

Site Number	Components	Size (m²)	Density
31HT210*	Lithic	185	0.15
31HT212*	Lithic	325	0.21
31HT215*	Lithic	325	0.32
31RH287*	Lithic	720	0.27
31HT214*	Lithic	835	0.18
	range = 0.15 - 0.32		
	mean = 0.226		
31HT225*	Lithic	1332	0.55
31HT213*	Lithic/Yadkin	2125	0.19
31HT211*	Lithic	3175	0.72
	range = 0.19 - 0.72		
	mean = 0.486		

Lithic Resource Use

The overall findings from the present survey of debitage type were considerably different from those of the Camp Mackall Drop Zone and from the Sicily Drop Zone survey (Trinkley et al. 1996a, 1996b). At the Sicily Drop Zone quartz comprised over 63% of the debitage recovered. The Camp Mackall Drop Zone reflected a strong reliance on metavolcanic materials, with only 22.1% of the debitage being quartz. The Camp Mackall Special Forces Training Area survey tract was very similar to the previous Camp Mackall Drop Zone study in that quartz (n=9) comprised only 34.6% of the total debitage recovered. In the Fort Bragg general survey tracts quartz (n=127) comprised 46.7% of the total debitage recovered, while metavolcanic materials (n=145) comprised 53.3%.

The most reasonable explanation for this difference in use may be distance to the raw material source. It was observed that while quartz in the form of river cobbles was locally available in the Fort Bragg area, the closest metavolcanic outcrop is found about 16 km to the west and the large Morrow Mountain quarry is located about 97 km away. In the Camp Mackall area there is no large drainage like the Lower Little River to supply river cobbles, but the project area is considerably closer to metavolcanic rock outcrops, probably only about 6 km to the west. All other things being equal, this difference of 10 km may have been sufficient to encourage a reliance on quartz in the Fort Bragg area. If so, then this may help us to better understand the cost-benefit ratio of the two materials.

The only tools recovered from the current study, a biface and used flake, were manufactured from metavolcanic material.[1] This preference for metavolcanic materials in tool manufacture was found at both the Camp Mackall Drop Zone (Trinkley et al. 1996b) and the Sicily Drop Zone (Trinkley et al. 1996a) and strongly suggests that prehistoric occupants preferred to use metavolcanic material for tools which were intended to be curated.

Artifacts

Lithic tools are exceedingly uncommon in the present study. None were recovered from the Camp Mackall Special Forces Training Area survey tract.[2] Investigations into the Fort Bragg general survey tract recovered only one biface and one used flake (Figure 62). No projectile points were recovered from any of the sites or isolated occurrences.

Pottery was found at only one site. A total of 36 sherds (34 identifiable and 2 unidentifiable

[1] Subsequent to the completion of the draft report and transfer of collections to Fort Bragg, a stem fragment of metavolcanic material, not further identifiable, was found in the collection from 31RH287*. This item, however, is not included in these discussions.

[2] The exception, of course, is the possible stem fragment discussed in footnote 1.

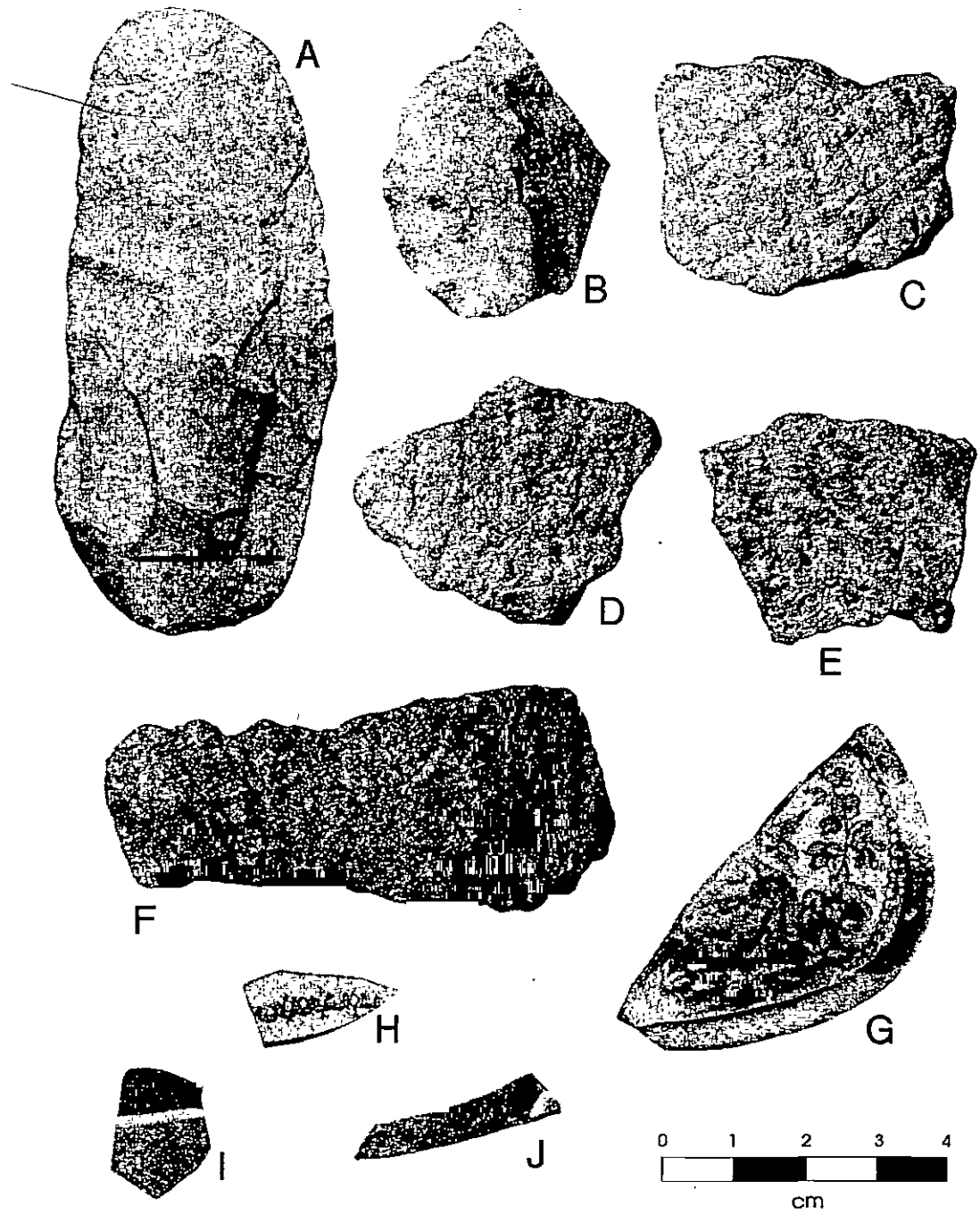

Figure 62. Artifacts recovered from Fort Bragg general survey tracts "H" and "J". A, biface (31HT225*); B, used flake (31HT213*); C-D, Yadkin Cord Marked (31HT213*); E-F, Yadkin Fabric Impressed (31HT213); G, whiteware, purple transfer print (31HT231**); H, whiteware, blue transfer print (31HT231**); I-J, pearlware, annular (31HT231**).

specimens) were recovered, representing about 11.7% of the entire prehistoric collection. This is a significantly larger proportion than was found in the Camp Mackall Drop Zone (2.0%) and the Sicily Drop Zone (1.7%). Examples of the recovered pottery are illustrated in Figure 62.

All of the identifiable materials were classified as Yadkin (n=22), with examples of plain (50%), cord marked (23.6%), and fabric impressed (26.4%) surface treatments encountered. The Yadkin sherds exhibit considerable variation in paste, with some exhibiting very large quantities of crushed feldspar and others lesser quantities of subangular quartz sand. The latter might be classified by some researchers as Cape Fear, although we have chosen to lump them all together in the Yadkin classification. They also might have been typed as Mount Pleasant (Phelps 1981) or even the less well known Lenoir or Grifton series (Crawford 1966). All of these, however, were excluded as being too distant from the project area. Ward (1983) suggests that Yadkin may exhibit greater variability than originally identified, based on his work in the White's Creek drainage of South Carolina's Inner Coastal Plain.

One reviewer inquired why these sherds might not be identified as either Oak Island or Deep Creek/New River? Oak Island (South 1976) would be an inappropriate identification based on its typological definition that the temper is crushed shell. Although this shell is often leached because of the acidic and permeable soils of the Coastal Plain, there was no evidence of either shell or "hole" temper in the Fort Bragg sherds. In addition, there is little evidence that Oak Island, or its equivalent in Loftfield's (1976) work, White Oak, is found as far inland as Fort Bragg.

Likewise, although the reviewer is certainly correct that many sherds typed as Deep Creek or New River might easily be lost in a Yadkin collection, there is again some geographic separation of the two. While this is certainly not the appropriate way to develop typological distinctions, the profession has not yet felt confident to deal with these typological similarities in any meaningful way (for example, the efforts by Anderson et al. [1982] to develop type-varieties for South Carolina has been largely ignored, with only Chicora Foundation acknowledging that this is a professionally appropriate approach).

As a result, we have chosen the most conservative approach, associating the Fort Bragg collection with the type in closest geographic proximity, which also has the longest usage. We do believe, however, that additional study of large collections will likely confirm a closer typological (and perhaps cultural) affinity with the "piedmont" Yadkin than with the "coastal" Deep Creek.

Also present in the collection are 2 small (i.e., under 2.5 cm in diameter) unidentifiable sherds. No attempt has been made to type these materials because essential information on paste and surface treatment are difficult, or impossible, to obtain.

Recommendations

The site recommended as eligible (31CD106**) should be monitored to ensure that the location is undisturbed. Expanded commercial and military activities at Fort Bragg may place the site at risk. The base archaeologist should be notified of any future pending work that may take place within this area of the base.

All other sites in the Fort Bragg general survey tracts may be monitored to explore the effects of the proposed logging operations. Erosion control markers might, for example, be placed at the sites in an effort to determine the amount of soil loss over a period of time.

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APPENDIX 1.
SPECIMEN CATALOG

Site Number: 31CD529

Accession Number: 96300

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T4, ST 3	1	interior metavolcanic flake	

Site Number: 31HT210

Accession Number: 96301

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T19, ST14	1	interior metavolcanic flake	
m2	N200E210	1	interior metavolcanic flake	
m3	N210E210	1	interior quartz flake	
m4	TU 1-H, 20-30 cm	2	interior quartz flakes	
m5	TU 1-H, 30-40 cm	2	interior metavolcanic flakes	
		3	interior quartz flakes	
m6	TU 1-H, 40-50 cm	1	interior metavolcanic flake	
		1	interior quartz flake	

Site Number: 31HT211

Accession Number: 96302

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T22, ST36	3	interior metavolcanic flakes	
m2	T23, ST37	9	interior metavolcanic flakes	
m3	T23, ST39	3	interior metavolcanic flakes	
		1	interior quartz flake	
m4	T24, ST36	1	secondary quartz shatter	
m5	N200E210	1	interior quartz shatter	
m6	N200E240	4	interior quartz flakes	
m7	N200E250	1	interior metavolcanic flake	
m8	N220E220	1	interior metavolcanic flake	
m9	N220E250	1	interior metavolcanic flake	
m10	N230E180	2	interior metavolcanic flakes	
		1	interior quartz flake	
m11	N230E190	1	interior metavolcanic flake	
m12	N230E220	3	interior metavolcanic flakes	
m13	N230E280	1	interior metavolcanic flake	
m14	N240E220	1	interior metavolcanic flake	
m15	N240E230	1	interior quartz flake	
m16	N240E240	1	interior metavolcanic flake	
m17	N240E250	1	interior quartz flake	
m18	N240E270	1	interior quartz flake	
m19	N240E280	1	interior metavolcanic flake	
m20	N250E170	1	interior metavolcanic flake	
m21	N250E180	1	secondary quartz shatter	
m22	N260E250	1	secondary quartz flake	
m23	TU 2-H, 20-30 cm	1	interior metavolcanic flake	
		1	interior quartz flake	

Site Number: 31HT212

Accession Number: 96303

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T24, ST6	4	interior quartz flakes	
m2	N200E220	4	interior quartz flakes	
m3	N210E220	1	interior metavolcanic flake	

m4	TU 3-H, 20-30 cm	2	interior metavolcanic flakes
m5	TU 3-H, 30-40 cm	2	interior metavolcanic flakes
		1	interior quartz flake
m6	TU 3-H, 50-60 cm	1	interior quartz flake

Site Number: 31HT213

Accession Number: 96304

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T97, ST4	1	interior quartz flake	
m2	N170E190	4	interior orthoquartzite flakes	
m3	N170E200	6	interior quartz flakes	
p4	N180E190	1	small UID sand tempered sherd (5.27g)	X
m5	N180E200	3	interior metavolcanic flakes	
		1	interior quartz flake	
p6	N180E210	1	small UID sand tempered sherd (2.79g)	X
m7	N190E190	1	interior metavolcanic flake	
m8	N190E205	2	interior quartz flakes	
m9	N190E210	1	secondary metavolcanic flake	
		2	interior quartz flakes	
p10	N200E190	1	large Yadkin fabric impressed sherd (10.62g)	X
m11		1	interior metavolcanic flake	
m12	N200E210	4	interior metavolcanic flakes	
		2	interior quartz flakes	
p13	N210E200	1	small Yadkin fabric impressed sherd (4.35g)	X
m14		2	interior quartz flakes	
p15	N210E210	1	small Yadkin fabric impressed sherd (3.30g)	X
a16		1	metavolcanic used flake	X
m17		2	secondary quartz flakes	
m18		1	interior metavolcanic flake	
m19		3	quartz raw material (25.20g)	X
m20	N220E200	1	quartz flake	
		2	secondary metavolcanic flakes	
p21	N220E210	15	Yadkin plain sherds (81.62g)	X
p22		1	large Yadkin fabric impressed sherd (23.70g)	X
p23		5	small Yadkin fabric impressed sherds (20.72g)	X
m24		2	interior quartz flakes	

m25	N230E210	2	interior metavolcanic flakes	
m26	N240E200	1	interior quartz flake	
		2	interior metavolcanic flakes	
p27	N250E210	2	large Yadkin cord marked sherds (24.32g)	X
p28		6	small Yadkin cord marked sherds (19.08g)	X
m29	N250E210	3	interior metavolcanic flakes	
m30	N260E210	1	interior quartz flake	
p31	TU 4-H, 0-10 cm	2	small Yadkin plain sherds (12.94g)	X
m32	TU 4-H, 10-20 cm	1	interior metavolcanic flake	
m33	TU 4-H, 20-30 cm	1	interior quartz flake	
		10	interior metavolcanic flakes	
m34	TU 4-H, 30-40 cm	1	interior quartz flake	
		9	interior metavolcanic flakes	

Site Number: 31HT214

Accession Number: 96305

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T99, ST16	1	interior metavolcanic flake	
		1	interior quartz flake	
m2	T99, ST17	3	interior metavolcanic flakes	
		1	interior quartz flake	
m3	N190E200	2	interior metavolcanic flakes	
		6	interior quartz flakes	
m4	N200E190	1	raw material (14.63g)	
m5	N210E180	1	interior metavolcanic flake	
		1	interior quartz flake	
m6	N210E190	3	interior metavolcanic flakes	
m7	N210E200	1	interior quartz flake	
m8	N220E180	1	interior quartz flake	
m9	N220E200	1	interior metavolcanic flake	
m10	TU 5-H, 0-10 cm	1	interior quartz flake	
m11	TU 5-H, 20-30 cm	3	interior metavolcanic flakes	
		1	interior quartz flake	
m12	TU 5-H, 30-40 cm	5	interior metavolcanic flakes	
		4	interior quartz flakes	
m13		1	quartz raw material (13.72g)	
m14	TU 5-H, 40-50 cm	5	interior metavolcanic flakes	
		1	interior quartz flake	

Site Number: 31HT215

Accession Number: 96306

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T197, ST1	4	interior quartz flakes	
m2		2	interior metavolcanic flakes	
m3	T197, ST2	1	interior quartz flake	
m4		1	interior metavolcanic flake	
m5	TU 6-H, 40-50 cm	2	interior quartz flakes	

Site Number: 31HT216

Accession Number: 96307

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T11, ST8	1	interior quartz flake	

Site Number: 31HT217

Accession Number: 96308

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T14, ST2	1	interior metavolcanic flake	

Site Number: 31HT218

Accession Number: 96309

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T18, ST20	1	interior quartz flake	

Site Number: 31HT219

Accession Number: 96310

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T22, ST29	1	interior quartz flake	

Site Number: 31HT220

Accession Number: 96311

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T23, ST12	2	interior metavolcanic flakes	

Site Number: 31HT221

Accession Number: 96312

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T3, ST2	1	interior quartz flake	

Site Number: 31HT222

Accession Number: 96313

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T26, ST18	1	interior quartz flake	

Site Number: 31HT223

Accession Number: 96314

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T27, ST11	2	interior quartz flakes	

Site Number: 31HT224

Accession Number: 96315

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T46, ST6	1	interior quartz flake	

Site Number: 31HT225

Accession Number: 96316

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T66, ST3	1	interior quartz flake	
m2	N180E210	1	interior quartz flake	
m3	N190E220	4	interior quartz flakes	
m4	N190E260	1	interior quartz flake	
m5		1	interior metavolcanic flake	
m6	N200E190	1	interior metavolcanic flake	
m7	N200E220	2	interior metavolcanic flakes	
m8	N200E240	1	interior quartz flake	
m9	N200E260	2	interior quartz flakes	
m10	N200E270	5	interior metavolcanic flakes	
a11	N210E210	1	biface	X
m12		2	interior metavolcanic flakes	
m13	N210E220	1	secondary metavolcanic flake	
m14	TU 5-I, 20-30 cm	1	interior metavolcanic flake	

Site Number: 31HT226

Accession Number: 96317

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T68, ST4	1	interior quartz flake	

Site Number: 31HT227

Accession Number: 96318

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T49, ST17	2	interior quartz flakes	

Site Number: 31HT228

Accession Number: 96319

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
p1	T62, ST17	1	small Yadkin cord impressed sherd rim (2.35g)	X

Site Number: 31HT229

Accession Number: 96320

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T64, ST17	1	interior quartz flake	
m2		4	interior metavolcanic flakes	

Site Number: 31HT230

Accession Number: 96321

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	T67, ST1	4	interior quartz flakes	

Site Number: 31HT231**

Accession Number: 96322

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
p1	T85, ST1	1	whiteware, blue transfer print, burnt	X
p2	N170E200	1	stoneware, alkaline glaze	X
p3	N180E190	1	pearlware, burnt	X
p4	N190E185	1	whiteware, burnt	X
a5	N190E220	1	bottle glass, black	X
a6	N195E205	1	chicken wire	X
p7	N200E190	1	creamware	X
p8	N200E220	1	refined earthenware, burned	X
a9	N210E190	2	bottle glass, black	X
p10		1	whiteware	X

a11	N210E200	1	rosehead nail, hand wrought, 3d	X
m12	N210E210	5	asbestos shingles (12.56g)	X
m13	N210E220	1	brick fragment (9.64g)	X
a14	N230E190	1	bolt fragment	X
p15	N230E205	1	stoneware, bristol slip	X
a16	N230E215	1	wagon hub, ca.1909	X
p17	TU 5, 0-10 cm	1	creamware, undecorated bowl rim	X
a18	TU 5, 10-20 cm	1	cut nail, fragment	X
p19		2	pearlware, annular	X
p20		1	stoneware, alkaline glaze	X

Site Number: 31RH287

Accession Number: 96323

Recorder: W O'CONNOR

Date: 24 JULY 1996

Spec No.	Location	Number	Description	Class 1
m1	Collection Unit 1	5	interior quartz flakes	
m2		5	interior metavolcanic flakes	
m3		2	metavolcanic core (127.67g)	
m4	Collection Unit 2	3	interior quartz flakes	
m5		6	interior metavolcanic flakes	
m6	N175E200	2	interior metavolcanic flakes	
m7	TU 1-CM, 0-10 cm	1	interior metavolcanic flake	
m8	TU 1-CM, 10-20 cm	1	interior quartz flake	
m9		1	interior metavolcanic flake	